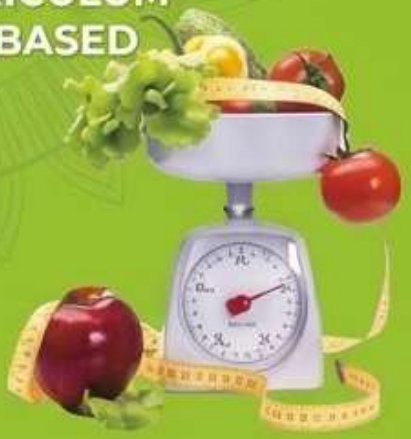
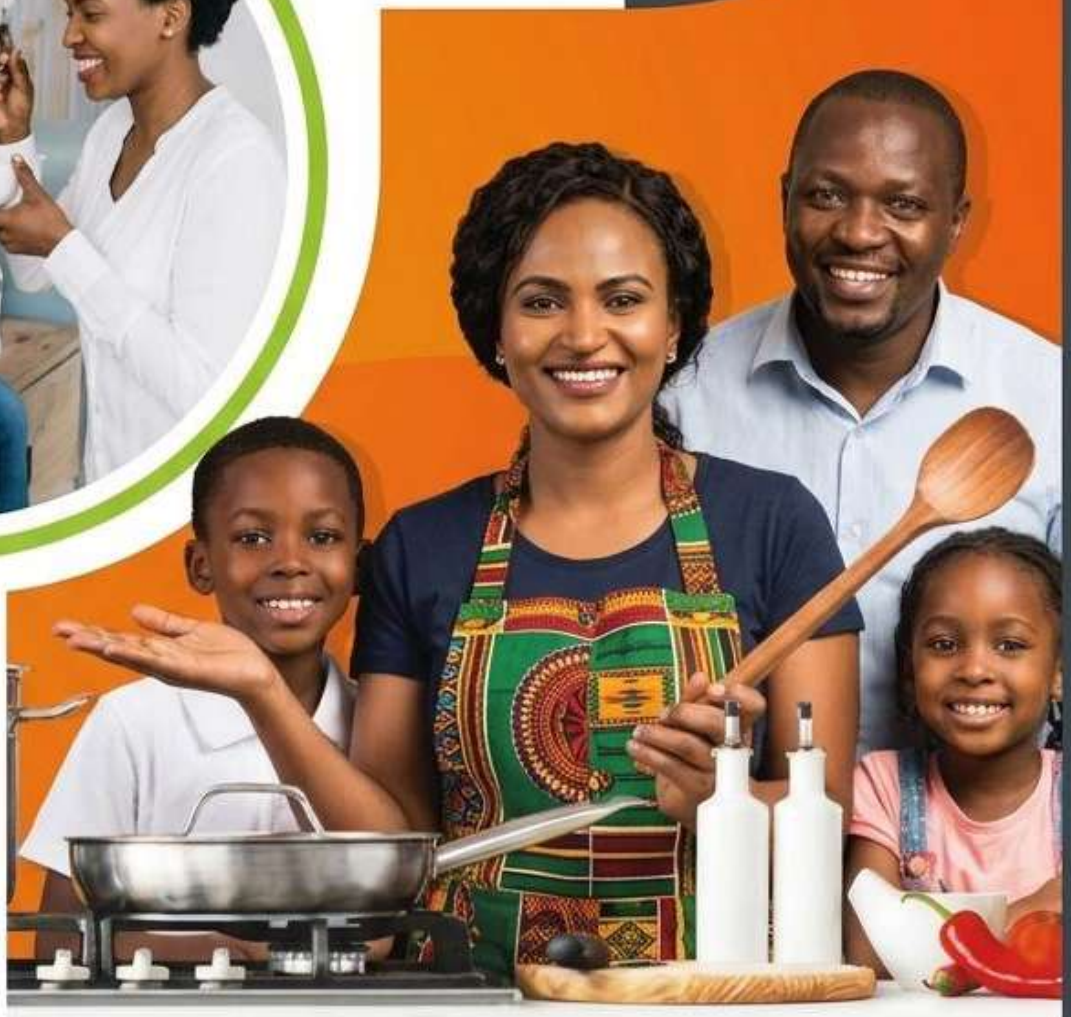
KENYAN BASIC EDUCATION CURRICULUM
SENIOR SCHOOL COMPETENCY BASED
EDUCATION (GRADE 11)



GRADE 11 HOME SCIENCE NOTES

AUTHOR: COMPETENCE GROUP





Grade 11

PREPARED BY COMPETENCE GROUP

GRADE 11 HOME SCIENCE

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.1: PLANNING FAMILY MEALS



1.0 INTRODUCTION TO FOOD AND NUTRITION

Food is an essential basic human need. It provides the body with nutrients required for energy, growth, development, repair of worn-out tissues and protection against diseases.

Food and nutrition is an important area of Home Science that equips learners with knowledge and practical skills for selecting, preparing, cooking, serving and managing food for individuals and families.

In Kenya, families consume different types of foods depending on their geographical location, cultural practices, economic status, food availability, religious beliefs and personal preferences.

Examples of commonly consumed Kenyan foods include:

- Cereals: Maize, rice, millet, sorghum and wheat.
- Roots and tubers: Irish potatoes, sweet potatoes, cassava, arrowroots and yams.
- Legumes: Beans, green grams, cowpeas, pigeon peas and lentils.
- Animal products: Milk, eggs, meat, chicken and fish.
- Vegetables: Sukuma wiki, spinach, managu, kunde, cabbage and carrots.
- Fruits: Bananas, mangoes, oranges, avocados, pawpaws and watermelons.

Proper meal planning helps families combine these foods to obtain balanced and nutritious meals.

1.1.1 MEANING OF KEY TERMS USED IN MEAL PLANNING

It is important to understand the terminology used in meal planning and meal management.

1. Meal

A meal is a quantity or combination of food eaten at a particular time of the day.

Examples:

- Breakfast.
- Lunch.
- Dinner.
- Brunch.
- Morning tea.
- Afternoon tea.

2. Meal planning

Meal planning is the process of deciding in advance the foods and dishes to be prepared and served at different meals over a given period.

It involves selecting suitable foods, determining quantities, considering nutritional requirements and arranging meals according to the needs of family members.

For example, a family may plan to have:

- Breakfast: Porridge, boiled eggs and a banana.
- Lunch: Rice, beans and cabbage.
- Dinner: Ugali, fish and sukuma wiki.

3. Meal management

Meal management is the process of organising and controlling all activities and resources involved in providing meals for individuals or families.

It involves:

- Planning meals.
- Purchasing food.
- Storing food.
- Preparing ingredients.
- Cooking food.
- Serving meals.
- Managing leftovers.
- Cleaning the cooking and dining areas.

4. Course

A course is a separate part of a meal served at a particular stage during a formal meal.

Examples include:

- First course: Soup.
- Main course: Beef stew, rice and vegetables.
- Dessert course: Fruit salad.

5. Menu

A menu is a written or stated list of foods and beverages to be served at a particular meal or during a specified period.

A menu guides food purchasing, preparation, cooking and serving.

Examples:

Meal	Menu
Breakfast	Porridge, boiled eggs and fruit
Lunch	Rice, green grams and vegetables
Dinner	Ugali, beef stew and spinach

6. Starter

A starter is a small dish served before the main course of a meal to stimulate appetite.

Characteristics of a good starter:

- It should be appetising.
- It should be served in small quantities.
- It should not make the consumer excessively full.
- It should complement the main course.
- It should be attractively presented.

Examples:

- Vegetable soup.
- Tomato salad.
- Fresh fruit pieces.
- Small servings of vegetable samosas.

7. Main course

A main course is the principal or most substantial part of a meal.

It usually provides a considerable proportion of the nutrients and energy required by the body.

Examples:

- Ugali, beef stew and sukuma wiki.
- Rice, beans and vegetables.
- Chapati, green grams and cabbage.

- Mashed potatoes, fish and vegetables.

8. Dessert

A dessert is a dish, usually sweet, served at the end of a meal.

Examples:

- Fruit salad.
- Fresh mangoes.
- Watermelon slices.
- Yoghurt.
- Fruit pudding.

9. Accompaniment

An accompaniment is a food item served alongside the main dish to improve its flavour, appearance, nutritional value or variety.

Examples:

- Sukuma wiki served with ugali.
- Vegetable salad served with rice.
- Stewed beans served with chapati.
- Tomato sauce served with meat.

10. Condiments

Condiments are substances added to food in small quantities to improve its flavour, aroma or appearance.

Examples:

- Salt.
- Pepper.
- Tomato sauce.
- Ginger.
- Garlic.
- Lemon juice.
- Vinegar.
- Chilli sauce.

Excessive use of salt and some commercially prepared sauces should be avoided because they may contribute to excessive sodium intake.

1.1.2 IMPORTANCE OF MEAL PLANNING

Meal planning is an essential activity in family food management. It ensures that family members receive appropriate meals while household resources are used effectively.

1. Ensures a balanced diet

Meal planning helps families include different food groups in their meals to provide carbohydrates, proteins, fats, vitamins, minerals, fibre and water.

For example, serving rice, beans, vegetables and an orange provides a combination of nutrients.

2. Meets individual nutritional requirements

Different family members have different nutritional needs depending on their age, health status, sex, physical activity and stage of development.

Meal planning ensures that children, adolescents, expectant mothers and older persons receive suitable meals.

3. Saves money

Planning meals helps families prepare shopping lists and purchase only the required food items.

It reduces unnecessary purchases and helps households work within their budgets.

4. Prevents food wastage

Meal planning enables the household to purchase appropriate quantities of food.

It also encourages proper storage and creative use of safe leftovers.

5. Saves time and energy

When meals are planned in advance, the person responsible for cooking can organise ingredients and cooking activities efficiently.

This reduces last-minute decisions and unnecessary movement during food preparation.

6. Promotes good health

A well-planned diet helps reduce nutritional deficiencies and supports healthy body functioning.

It also encourages appropriate food choices and moderation.

7. Provides variety in meals

Planning helps avoid serving the same dishes repeatedly.

For example, a family can alternate rice, ugali, potatoes, chapati and other staple foods.

8. Accommodates individual preferences

Family members may have different food preferences arising from personal taste, cultural practices and religious beliefs.

Meal planning allows these differences to be considered.

9. Promotes family satisfaction

Well-planned meals encourage family members to enjoy eating together and improve cooperation within the household.

10. Makes food purchasing easier

A menu helps the household prepare a shopping list based on the foods required.

This reduces unnecessary trips to shops and markets.

11. Encourages proper food storage

Meal planning helps determine which foods should be purchased fresh and which can be stored for future use.

12. Promotes food security

Planning helps families make effective use of locally available seasonal foods and preserve food when it is abundant.

1.1.3 FACTORS TO CONSIDER WHEN PLANNING MEALS FOR THE FAMILY

Meal planning requires careful consideration of the needs of every family member and the resources available.



1. Nutritional requirements

The nutritional needs of family members should guide the selection of foods.

- Meals should provide adequate carbohydrates for energy.
- Proteins should be included for growth and tissue repair.
- Fats should provide energy and assist absorption of fat-soluble vitamins.
- Vitamins and minerals should support body regulation and protection.
- Fibre should support healthy digestion.
- Water should be provided for hydration.

For example, children need adequate nutrients for growth, while expectant mothers require increased attention to iron, folate and other essential nutrients.

2. Age of family members

Different age groups have different nutritional requirements.

- Infants require breast milk and age-appropriate complementary foods.
- Young children require nutrient-dense meals that support rapid growth.
- Adolescents require adequate energy, protein, calcium and iron.
- Adults require meals that maintain health and body functions.
- Older persons may need meals that are easy to chew and digest.

3. Health status

The health conditions of family members influence the types of foods selected.

Examples:

- A person with diabetes may require controlled carbohydrate portions and appropriate meal distribution.
- A person with hypertension may need meals with reduced salt.
- A person with food allergies should avoid the allergenic food.
- A person with swallowing difficulties may require modified food textures under professional guidance.
- A person recovering from illness may need nutrient-dense meals according to their condition.

4. Physical activity and occupation

The amount of energy required depends partly on the level of physical activity.

- Manual workers require adequate energy to support physical work.
- Athletes need sufficient energy, carbohydrates, proteins and fluids to support training and recovery.
- Sedentary workers may require less energy depending on their individual needs.
- Learners involved in sports require appropriate meals and hydration.

5. Family income and food budget

The amount of money available determines the foods a household can purchase.

A good meal planner should:

- Work within the family budget.
- Compare prices from different sellers.
- Buy foods in season.
- Select affordable local foods.
- Avoid unnecessary expensive products.
- Purchase food in suitable quantities.

Examples of affordable nutritious foods in Kenya include beans, green grams, eggs, omena, seasonal vegetables, sweet potatoes and locally available fruits.

6. Availability of food

Meals should be planned using foods that are readily available in the locality.

For example:

- Communities around Lake Victoria may have access to fresh fish.
- Highland communities may have access to potatoes, vegetables and dairy products.
- Arid and semi-arid areas may rely on locally available grains, legumes, milk and animal products.

Food availability also changes with seasons.

7. Cultural and religious beliefs

Cultural and religious practices influence food selection and preparation.

Examples:

- Some communities avoid particular animal products.
- Muslims avoid pork and require halal food.
- Some families follow vegetarian diets.
- Certain communities have traditional dishes prepared during ceremonies.

A meal planner should respect these beliefs.

8. Personal preferences and dislikes

Family members have different tastes and preferences.

The planner should consider:

- Favourite foods.
- Foods disliked by family members.
- Preferred methods of cooking.
- Individual eating habits.

However, personal preferences should be balanced with nutritional needs.

9. Variety in meals

A good menu should provide different colours, flavours, textures, shapes and cooking methods.

Variety prevents monotony and encourages consumption of different foods.

For example, a family can alternate boiled potatoes, rice, ugali and chapati instead of serving ugali at every meal.

10. Time available for preparation

The time available to prepare meals should influence the menu.

- Busy households may select dishes requiring less preparation time.
- Meals requiring lengthy cooking should be prepared in advance.
- Food preparation activities can be organised to reduce delays.
- Pressure cookers and other appropriate appliances may save time when used safely.

11. Cooking facilities and equipment

Meal planning should consider the cooking equipment and facilities available.

Examples:

- Gas cookers.
- Electric cookers.
- Charcoal jikos.
- Firewood stoves.
- Refrigerators.
- Pressure cookers.
- Cooking utensils.

A household without refrigeration should carefully plan the purchase and storage of highly perishable foods.

12. Number of family members

The number of people in the household determines the quantities of food required.

A meal planned for two people will require different quantities from one planned for eight people.

13. Food hygiene and safety

Foods should be selected, stored and prepared in ways that minimise contamination and food poisoning.

The meal planner should consider:

- Clean water availability.
- Safe food storage.
- Proper cooking temperatures.
- Separation of raw and cooked foods.
- Clean preparation surfaces.
- Personal hygiene.

14. Climate and weather conditions

Weather conditions can influence food preferences and meal choices.

Examples:

- Warm soups and porridge may be preferred during cold weather.
- Fresh fruits, vegetables and adequate fluids may be useful during hot weather.
- Light meals may be preferred during hot afternoons.

15. Occasion and purpose of the meal

Meals planned for ordinary family days may differ from those prepared for special occasions.

Examples:

- Birthday celebrations.

- Weddings.
- Religious gatherings.
- Family reunions.
- School celebrations.

16. Nutritional needs of special groups

Special attention should be given to:

- Infants and young children.
- Adolescents.
- Expectant mothers.
- Breastfeeding mothers.
- Older persons.
- People living with illness.
- Athletes.
- Vegetarians.

17. Food preservation and storage facilities

The availability of storage facilities influences the choice and quantity of foods purchased.

Examples include:

- Refrigerators for perishable foods.
- Airtight containers for dry foods.
- Freezers for suitable frozen foods.
- Drying facilities for cereals and vegetables.

18. Environmental sustainability

Meal planners should consider food choices and preparation practices that reduce environmental waste.

These include:

- Buying locally produced foods.
- Using seasonal foods.
- Avoiding excessive packaging.
- Composting suitable food waste.
- Conserving water and cooking fuel.

1.1.4 DIFFERENT TYPES OF MEALS PREPARED FOR THE FAMILY

Families prepare different meals throughout the day depending on their schedules, nutritional needs, preferences and available resources.

The main types of meals include breakfast, brunch, lunch, dinner, morning tea and afternoon tea.



A. Breakfast

Breakfast is the first meal eaten in the morning after the night's sleep.

It provides energy and nutrients needed to begin daily activities.

Importance of breakfast

1. Replenishes energy after several hours without food during sleep.
2. Provides nutrients required for normal body functioning.
3. Supports concentration and learning among school-going children.
4. Helps prevent excessive hunger later in the day.
5. Contributes to meeting daily nutritional requirements.
6. Provides an opportunity to consume important food groups.

Characteristics of a good breakfast

- Should be nutritious and balanced.
- Should provide adequate energy.
- Should include a variety of food groups.
- Should be prepared hygienically.
- Should be appropriate for the age and needs of the consumer.
- Should be served in suitable portions.

Examples of breakfast foods in Kenya

- Porridge made from millet, sorghum or maize flour.
- Boiled or scrambled eggs.
- Wholemeal bread.
- Sweet potatoes.
- Arrowroots.
- Boiled maize.
- Milk or yoghurt.
- Fruits such as bananas, oranges and pawpaws.
- Tea, where appropriate.

Examples of breakfast menus

Menu	Foods served
Menu 1	Millet porridge, boiled egg and banana
Menu 2	Wholemeal bread, milk and pawpaw
Menu 3	Sweet potatoes, boiled eggs and tea
Menu 4	Porridge, groundnuts and orange

B. Brunch

Brunch is a meal that combines elements of breakfast and lunch. It is normally eaten between the usual breakfast and lunch times.

It is suitable for individuals or families who wake up late or have busy morning schedules.

Characteristics of brunch

1. Combines breakfast and lunch dishes.
2. Is usually more substantial than an ordinary breakfast.
3. Can include both light and substantial dishes.
4. May be served during weekends, holidays and social gatherings.
5. Should provide a balanced combination of nutrients.

Examples of brunch foods

- Chapati and green grams.
- Eggs and vegetable sandwiches.
- Sweet potatoes and milk.
- Rice, beans and fruit.
- Pancakes and yoghurt.
- Vegetable omelette and wholemeal bread.

C. Lunch

Lunch is the main midday meal eaten between breakfast and dinner.

It provides energy and nutrients required to sustain the body during afternoon activities.

Importance of lunch

1. Replenishes energy used during morning activities.
2. Supplies nutrients needed for normal body functioning.
3. Prevents excessive hunger before dinner.
4. Supports concentration and productivity.
5. Contributes to daily food and nutrient requirements.

Characteristics of a good lunch

- Should be balanced and nutritious.
- Should include suitable energy-giving foods.
- Should contain body-building foods.
- Should include vegetables and/or fruits.
- Should be prepared and served hygienically.
- Should be appropriate for the consumer's activity level.

Examples of Kenyan lunch menus

Menu	Foods served
Menu 1	Rice, beans and cabbage
Menu 2	Ugali, fish and sukuma wiki
Menu 3	Githeri, avocado and fruit
Menu 4	Chapati, green grams and spinach
Menu 5	Mashed potatoes, beef stew and carrots

D. Dinner

Dinner is the evening meal usually eaten at the end of the day's activities.

It provides nutrients needed to meet daily requirements and supports the body's normal functions during rest and overnight recovery.

Characteristics of a good dinner

1. Should be nutritious and balanced.
2. Should be appropriate in quantity for the individual.
3. Should include a suitable combination of food groups.
4. Should be prepared using safe cooking methods.
5. Should not be unnecessarily heavy for individuals who prefer lighter evening meals.
6. Should be served at a convenient time.

Examples of dinner menus

- Ugali, beef stew and spinach.
- Rice, chicken and mixed vegetables.
- Mashed potatoes, beans and carrots.
- Sweet potatoes, fish and traditional vegetables.
- Chapati, lentil stew and cabbage.

E. 10 o'clock tea (morning tea)

This is a light meal or refreshment taken in the mid-morning, usually around 10 a.m.

It helps individuals maintain energy between breakfast and lunch.

Examples

- Tea and wholemeal bread.
- Milk and bananas.
- Fresh fruit.
- Yoghurt.
- Boiled maize.
- Groundnuts and fruit.
- Wholemeal biscuits and milk.

F. 4 o'clock tea (afternoon tea)

This is a light refreshment taken in the late afternoon, usually around 4 p.m.

It is commonly served to family members returning from school or work.

Examples

- Tea and mandazi.
- Milk and sweet potatoes.
- Fruit salad.
- Porridge and groundnuts.
- Wholemeal bread and milk.
- Boiled arrowroots.

Important consideration: Morning and afternoon tea should complement the main meals rather than replace them. Sugary drinks and highly refined snacks should not form the main part of these refreshments.

Comparison of different types of meals

Type of meal	Usual time	Main purpose
Breakfast	Morning	Break the overnight fast
Brunch	Late morning	Combine breakfast and lunch
Lunch	Midday	Sustain afternoon activities
Dinner	Evening	Provide nutrients for daily requirements

10 o'clock tea	Mid-morning	Provide light refreshment
4 o'clock tea	Late afternoon	Provide light refreshment

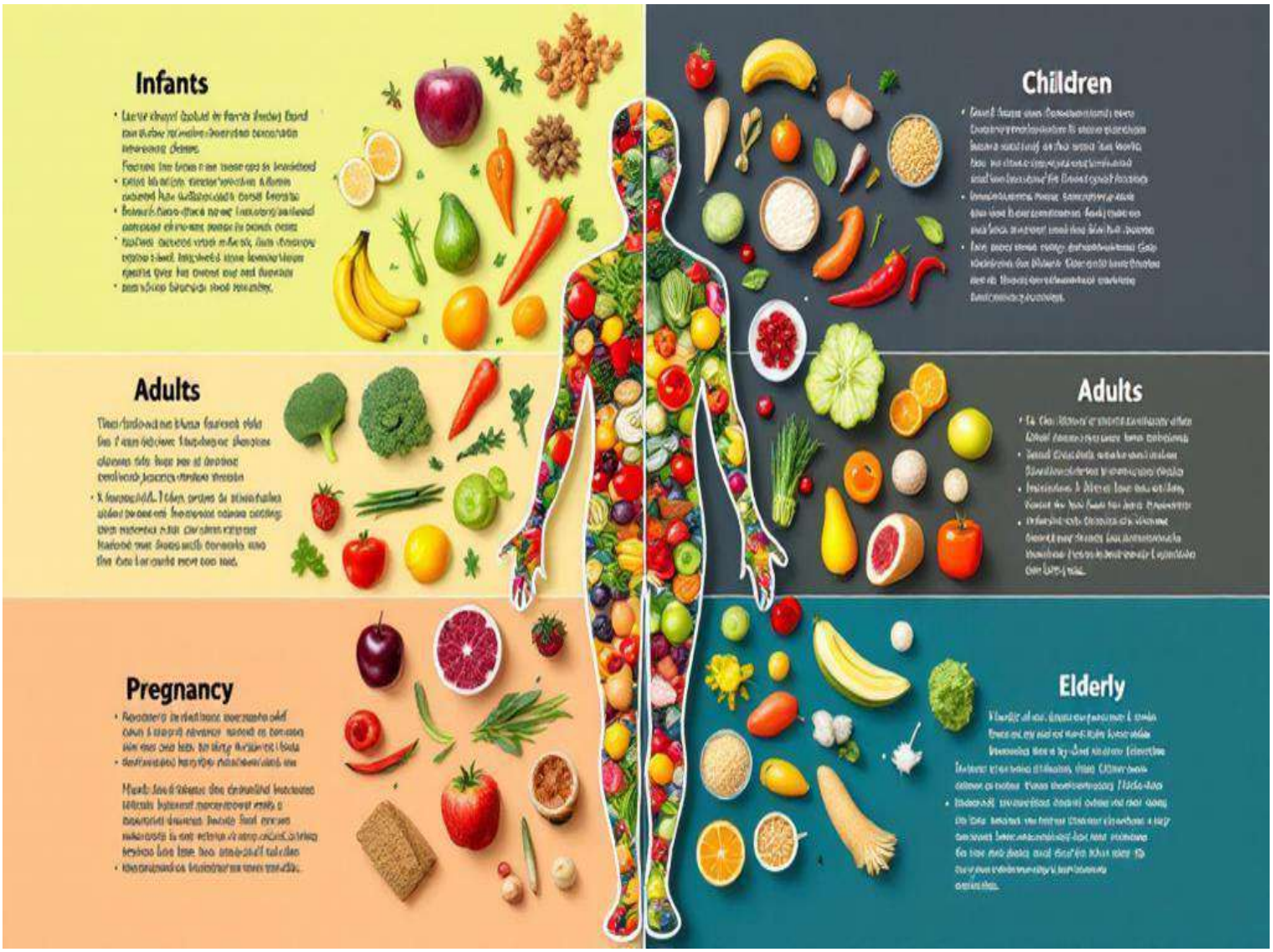
1.1.5 NUTRIENT REQUIREMENTS OF DIFFERENT GROUPS OF PEOPLE

Nutrient requirements refer to the amounts and types of nutrients that individuals need to maintain health, support growth, provide energy and carry out normal body functions.

Nutritional requirements differ from one person to another depending on:

- Age.
- Sex.
- Body size.
- Physical activity.
- Health status.
- Pregnancy and breastfeeding.
- Physiological development.
- Environmental conditions.

A meal planner should understand these differences to ensure that all family members receive appropriate meals.



A. Children aged 6–24 months

This group includes infants and young children undergoing rapid growth and development.

Their nutritional requirements are high in relation to their body size.

Nutritional requirements

1. **Breast milk:** Breast milk provides essential nutrients and protective factors. Exclusive breastfeeding is recommended for the first six months of life.

2. **Energy:** Children need adequate energy to support rapid growth, brain development and physical activity.

3. **Proteins:** Proteins are needed for the development and repair of body tissues.

Sources include:

- Eggs.
- Fish.
- Meat.
- Beans.
- Milk.
- Lentils.

4. **Iron:** Iron is necessary for the formation of haemoglobin, which transports oxygen in the blood.

Sources include:

- Meat.
- Fish.
- Beans.
- Green leafy vegetables.
- Iron-fortified foods.

5. **Calcium:** Calcium supports the development of strong bones and teeth.

Sources include:

- Milk.
- Yoghurt.
- Small fish eaten with bones.
- Calcium-fortified foods.

6. **Vitamins:** Vitamins support immunity, vision, growth and other body functions.

Sources include fruits and vegetables.

7. **Fats:** Healthy fats provide concentrated energy and support brain development.

Feeding recommendations

- Introduce appropriate complementary foods at around six months while continuing breastfeeding.
- Begin with small quantities of soft, well-prepared foods.

- Gradually increase food quantity, variety and texture according to the child's development.
- Provide a variety of foods from different food groups.
- Feed responsively by recognising hunger and fullness cues.
- Avoid choking hazards such as whole nuts and hard, round food pieces.
- Maintain high standards of food hygiene.
- Avoid adding unnecessary salt and sugar.
- Continue breastfeeding up to two years and beyond where possible.

Examples of suitable foods

- Mashed sweet potatoes.
- Well-mashed beans.
- Soft porridge enriched with appropriate nutrient-rich ingredients.
- Mashed pumpkin.
- Mashed avocado.
- Well-cooked and mashed vegetables.
- Soft cooked egg.
- Finely flaked fish with all bones carefully removed.

B. Children aged 24–59 months

These are preschool children who require adequate nutrition to support physical growth, brain development and active play.

Nutritional requirements

1. **Carbohydrates:** Provide energy for walking, playing and other physical activities.

Sources:

- Rice.
- Ugali.
- Potatoes.
- Sweet potatoes.
- Bread.
- Bananas.

2. **Proteins:** Support body growth and repair.

Sources:

- Eggs.
- Milk.
- Fish.
- Meat.

- Beans.
- Green grams.

3. **Calcium:** Supports bone and teeth development.

Sources:

- Milk.
- Yoghurt.
- Small fish eaten with bones.

4. **Iron:** Helps prevent iron-deficiency anaemia.

Sources:

- Meat.
- Beans.
- Lentils.
- Green leafy vegetables.

5. **Vitamins:** Support immunity, vision and normal body functioning.

Sources:

- Oranges.
- Mangoes.
- Pawpaws.
- Carrots.
- Spinach.

6. **Fats:** Provide energy and support the absorption of vitamins A, D, E and K.

7. **Fibre:** Supports healthy digestion and prevents constipation.

Sources:

- Fruits.
- Vegetables.
- Whole grains.
- Legumes.

Guidelines for feeding preschool children

- Provide regular meals and appropriate nutritious snacks.
- Serve small portions that can be increased according to appetite.
- Offer different foods to encourage variety.
- Provide clean drinking water.
- Avoid excessive sugary snacks and drinks.

- Encourage children to eat independently according to their abilities.
- Ensure food is soft enough and cut into safe sizes.
- Maintain food hygiene.

Examples of suitable meals

- Porridge, boiled egg and banana.
- Mashed potatoes, beans and vegetables.
- Rice, fish and carrots.
- Sweet potatoes and milk.
- Githeri with well-cooked vegetables.

C. Adolescents

Adolescents are young people undergoing rapid physical, emotional and psychological changes associated with puberty.

Their nutritional requirements increase because of rapid growth and development.

Nutritional requirements

1. **Energy:** Adequate energy is required to support rapid growth and increased physical activity.

2. **Proteins:** Essential for the development of muscles, organs and other body tissues.

Sources include meat, fish, eggs, beans, milk and groundnuts.

3. **Iron:** Particularly important for adolescent girls because of iron losses during menstruation. It is also needed for growth and blood formation in boys.

Sources include:

- Liver.
- Meat.
- Beans.
- Green leafy vegetables.
- Fortified cereals.

4. **Calcium:** Supports the development of strong bones and teeth during the important period of bone growth.

Sources include:

- Milk.
- Yoghurt.
- Small fish eaten with bones.
- Fortified foods.

5. **Vitamin D:** Helps the body absorb calcium and supports bone health.

Sources include sunlight exposure, eggs, oily fish and fortified foods.

6. **Zinc:** Supports growth, immunity and normal development.

Sources include meat, fish, eggs, legumes and nuts.

7. **Folate and other B vitamins:** Support cell growth, metabolism and the formation of blood cells.

8. **Water:** Replaces fluids lost through sweating and normal body processes.

Factors influencing adolescent food requirements

- Rapid growth.
- Sex and stage of puberty.
- Participation in sports.
- Body size.
- Health conditions.
- Pregnancy, where applicable.
- Personal food preferences.

Suitable meals for adolescents

- Rice, beef stew and vegetables.
- Ugali, fish and sukuma wiki.
- Chapati, beans and fruit.
- Eggs, wholemeal bread and milk.
- Sweet potatoes, groundnuts and fruit.

Special consideration: Adolescents should be guided to develop healthy eating habits, avoid extreme dieting and understand the importance of balanced nutrition.

D. Expectant mothers (pregnant women)

Expectant mothers require appropriate nutrition to support their own health and the growth and development of the unborn baby.

Pregnancy increases the need for certain nutrients.

Nutritional requirements

1. **Energy:** Additional energy may be needed, particularly during the second and third trimesters. Requirements vary according to the woman's condition and activity.

2. **Proteins:** Needed for the growth of the foetus, development of maternal tissues and preparation for breastfeeding.

Sources:

- Eggs.
- Milk.
- Fish.
- Meat.
- Beans.

- Lentils.

3. **Iron:** Required for increased blood production and prevention of iron-deficiency anaemia.

Sources:

- Meat.
- Liver, where appropriate and in accordance with pregnancy dietary guidance.
- Beans.
- Green leafy vegetables.
- Fortified foods.

4. **Folic acid (folate):** Essential for cell division and early development of the baby's neural tube.

Good sources include:

- Dark green leafy vegetables.
- Beans.
- Peas.
- Fortified foods.

Appropriate folic acid supplementation is important before conception and during early pregnancy as recommended by health professionals.

5. **Calcium:** Needed for the development of the baby's bones and teeth and maintenance of maternal bone health.

Sources:

- Milk.
- Yoghurt.
- Small fish eaten with bones.
- Fortified foods.

6. **Iodine:** Needed for the production of thyroid hormones, which support growth and brain development.

Sources:

- Iodised salt.
- Fish.
- Milk.
- Eggs.

7. **Vitamin A:** Supports vision, immunity and normal growth. Excessive preformed vitamin A, especially from high-dose supplements and certain animal sources, should be avoided during pregnancy.

8. **Vitamin C:** Helps with tissue development and improves absorption of iron from plant foods.

Sources:

- Oranges.

- Guavas.
- Tomatoes.
- Mangoes.

9. **Water:** Supports circulation, digestion and other physiological processes.

Guidelines for planning meals for expectant mothers

- Provide a variety of nutritious foods.
- Include iron-rich foods.
- Combine plant sources of iron with vitamin C-rich fruits and vegetables.
- Include calcium-rich foods.
- Provide adequate fibre to help prevent constipation.
- Encourage sufficient safe drinking water.
- Avoid alcohol.
- Avoid raw or undercooked animal products.
- Use properly pasteurised milk.
- Seek advice from qualified health workers on supplements and special dietary needs.
- Avoid excessive caffeine.

Examples of suitable meals

- Breakfast: Porridge, boiled egg and orange.
- Lunch: Rice, beans and spinach.
- Dinner: Ugali, fish and vegetables.
- Snack: Yoghurt and fruit.



E. Breastfeeding mothers (lactating mothers)

Breastfeeding mothers require adequate nutrition to support milk production and maintain their own health.

The nutritional requirements depend on the amount of breast milk produced, the mother's body condition and her level of activity.

Nutritional requirements

1. **Energy:** Additional energy is needed to support milk production.

2. **Proteins:** Support the production of breast milk and repair of maternal tissues.

Sources:

- Eggs.
- Fish.
- Milk.
- Meat.
- Beans.
- Green grams.

3. **Calcium:** Helps maintain healthy bones and teeth.

Sources:

- Milk.
- Yoghurt.
- Small fish eaten with bones.

4. **Iron:** Helps restore iron stores, especially after childbirth, depending on blood loss and individual nutritional status.

5. **Vitamin A:** Supports vision, immunity and normal body functions.

Sources:

- Carrots.
- Pumpkin.
- Dark green vegetables.
- Mangoes.

6. **Iodine:** Supports thyroid function and contributes to the iodine content of breast milk.

7. **Vitamin B12:** Important for nerve function and the development of the baby's nervous system.

8. **Water:** Adequate fluids help maintain hydration. Mothers should drink according to thirst and ensure access to safe drinking water.

Guidelines for meal planning

- Provide varied and balanced meals.
- Include adequate protein.
- Include fruits and vegetables.
- Provide calcium-rich foods.
- Encourage adequate fluid intake.
- Avoid unnecessary restrictive diets.

- Observe food hygiene.
- Seek professional guidance where special nutritional needs exist.

Examples of suitable meals

- Breakfast: Porridge, eggs and milk.
- Lunch: Rice, beans and vegetables.
- Dinner: Ugali, fish and sukuma wiki.
- Snacks: Fruits, yoghurt and groundnuts.

F. Older persons

Older persons are individuals in the later stages of life. Nutritional needs may change due to ageing, reduced physical activity, changes in appetite and health conditions.

Nutritional requirements

1. **Proteins:** Help maintain muscle mass and repair body tissues.

Sources:

- Eggs.
- Fish.
- Milk.
- Beans.
- Chicken.
- Lentils.

2. **Calcium:** Helps maintain bone strength and reduce the risk of bone-related conditions.

3. **Vitamin D:** Supports calcium absorption and bone health.

4. **Fibre:** Helps prevent constipation and promotes healthy bowel function.

Sources:

- Fruits.
- Vegetables.
- Whole grains.
- Legumes.

5. **Vitamin B12:** Supports nerve function and the formation of red blood cells.

6. **Iron:** Needed for the formation of haemoglobin, although requirements vary with age and sex.

7. **Water:** Important in maintaining hydration and normal body processes. Older persons may experience reduced thirst sensation.

8. **Healthy fats:** Provide energy and support absorption of fat-soluble vitamins.

Guidelines for meal planning for older persons

- Prepare meals that are easy to chew and swallow where necessary.

- Provide adequate protein.
- Include fruits and vegetables.
- Reduce excessive salt and added sugars.
- Serve manageable portions.
- Provide sufficient safe drinking water.
- Consider medical conditions and prescribed dietary requirements.
- Maintain regular meal times.
- Ensure food is attractive and appetising.

Examples of suitable meals

- Soft ugali, fish stew and vegetables.
- Mashed potatoes, beans and carrots.
- Porridge, milk and banana.
- Soft rice, chicken stew and spinach.
- Vegetable soup with wholemeal bread.



G. Manual workers

Manual workers are individuals whose occupations involve considerable physical effort.

Examples include:

- Farmers.
- Construction workers.
- Mechanics.
- Casual labourers.
- Road construction workers.
- Farm workers.

They generally require adequate energy to support physically demanding activities.

Nutritional requirements

1. **Carbohydrates:** Provide energy for muscular activity.

Sources:

- Ugali.
- Rice.
- Potatoes.
- Sweet potatoes.
- Bananas.
- Whole grains.

2. **Proteins:** Repair and maintain body tissues.

Sources:

- Beans.
- Meat.
- Fish.
- Eggs.
- Milk.

3. **Fats:** Provide concentrated energy.

Sources:

- Avocado.
- Nuts.
- Seeds.
- Vegetable oils.

4. **Vitamins and minerals:** Support metabolism, immunity and normal body functions.

5. **Water and electrolytes:** Replace fluids and minerals lost through sweating, especially during strenuous work in hot environments.

Guidelines for planning meals

- Provide adequate energy according to the workload.
- Include sufficient carbohydrates.
- Include protein-rich foods.
- Provide adequate fluids.
- Include fruits and vegetables.
- Plan suitable meals and snacks around working hours.
- Consider the working environment and heat exposure.

Examples of suitable meals

- Breakfast: Porridge, eggs and sweet potatoes.
- Lunch: Ugali, beans and sukuma wiki.
- Dinner: Rice, beef stew and vegetables.
- Snacks: Bananas, groundnuts and milk.

H. Sports persons and athletes

Sports persons are individuals who participate in organised or recreational physical activities that require physical fitness, endurance, strength and coordination.

They require appropriate nutrition to support performance, training and recovery.

Nutritional requirements

1. **Carbohydrates:** The main source of energy for moderate and high-intensity physical activities.

Sources:

- Rice.
- Potatoes.
- Ugali.
- Bread.
- Bananas.
- Pasta.

2. **Proteins:** Help repair and build muscles after exercise.

Sources:

- Eggs.
- Milk.
- Beans.
- Fish.

- Chicken.
- Meat.

3. **Fats:** Provide energy during prolonged, lower-intensity activities and support normal body functions.

4. **Iron:** Supports oxygen transport through the blood.

5. **Calcium:** Supports strong bones and normal muscle function.

6. **Vitamin D:** Supports bone health.

7. **Water:** Maintains hydration and helps regulate body temperature.

8. **Electrolytes:** Sodium and potassium help regulate fluid balance and muscle function. Their replacement needs depend on sweat losses and exercise conditions.

Guidelines for planning meals for sports persons

- Provide sufficient energy for training and competition.
- Include carbohydrate-rich foods.
- Provide protein-rich foods for recovery.
- Encourage appropriate hydration before, during and after exercise.
- Plan meals around training schedules.
- Provide fruits and vegetables.
- Avoid experimenting with unfamiliar foods immediately before competitions.
- Avoid unnecessary supplements and seek professional advice when required.

Examples of suitable meals

- Breakfast: Porridge, eggs and bananas.
- Lunch: Rice, chicken and vegetables.
- Dinner: Ugali, fish and spinach.
- Snack: Yoghurt and fruit.



I. Vegetarians

Vegetarians are people who avoid eating meat, fish and poultry. Some may consume animal products such as milk and eggs, depending on the type of vegetarian diet they follow.

Types of vegetarian diets

1. **Lacto-vegetarian diet:** Includes plant foods and dairy products but excludes meat, fish, poultry and eggs.

2. **Ovo-vegetarian diet:** Includes plant foods and eggs but excludes meat, fish, poultry and dairy products.

3. **Lacto-ovo vegetarian diet:** Includes plant foods, milk and eggs but excludes meat, fish and poultry.

4. **Vegan diet:** Excludes all animal-derived foods, including meat, fish, eggs, milk and other dairy products.

Nutritional requirements

Vegetarians need to obtain all essential nutrients from appropriate combinations of plant foods and, where permitted, animal-derived foods.

1. **Proteins:** Required for growth and tissue repair.

Plant sources include:

- Beans.
- Green grams.
- Lentils.
- Soya beans.
- Peas.
- Groundnuts.

2. **Iron:** Needed for blood formation.

Sources:

- Beans.
- Lentils.
- Dark green leafy vegetables.
- Fortified cereals.

Plant iron is absorbed less efficiently than iron from meat. Combining these foods with vitamin C-rich foods improves absorption.

3. **Calcium:** Important for bones and teeth.

Sources:

- Milk and yoghurt for vegetarians who consume dairy.
- Calcium-set tofu.
- Fortified plant drinks.
- Some green leafy vegetables.

4. **Vitamin B12:** Important for blood formation and nervous system functioning. Vegans need a reliable source from fortified foods or appropriate supplementation.

5. **Zinc:** Supports growth and immunity.

Sources:

- Beans.
- Seeds.
- Nuts.
- Whole grains.

6. **Omega-3 fatty acids:** Support normal body functions.

Sources:

- Flaxseeds.
- Chia seeds.
- Walnuts.
- Suitable fortified foods.

7. **Vitamin D:** Supports calcium absorption and bone health.

8. **Protein variety:** Combining different plant protein sources throughout the day helps provide the essential amino acids required by the body.

Guidelines for planning vegetarian meals

- Include a variety of legumes.
- Include nuts and seeds where safe.
- Use whole grains.
- Include fruits and vegetables.
- Provide reliable sources of vitamin B12.
- Include iron-rich foods with vitamin C-rich foods.
- Consider calcium and vitamin D requirements.
- Avoid depending on one food group alone.

Examples of vegetarian meals

- Githeri, avocado and fruit.
- Rice, green grams and spinach.
- Chapati, beans and cabbage.
- Sweet potatoes, groundnuts and milk.
- Vegetable stew and wholemeal ugali.

J. Invalids

Invalids are people whose health conditions or disabilities limit their ability to perform normal daily activities or who require special dietary attention because of illness.

Their nutritional requirements depend on the illness, treatment, physical condition and professional medical advice.

Nutritional requirements

1. **Energy:** Adequate energy is necessary to maintain body functions and support recovery.
2. **Proteins:** Help repair damaged tissues and support immunity.
3. **Vitamins:** Support normal body functioning and immunity.
4. **Minerals:** Support blood formation, bone health and other body processes.
5. **Water:** Supports hydration and normal physiological processes, unless fluid intake is medically restricted.
6. **Fibre:** May support bowel function where appropriate to the person's condition.

Guidelines for planning meals for invalids

- Consider the person's illness and medical advice.
- Prepare easily digestible meals where appropriate.
- Serve food in small, manageable portions if appetite is poor.
- Maintain high standards of hygiene.
- Consider food allergies and intolerances.
- Follow prescribed dietary restrictions.
- Provide attractive and appetising meals.
- Assist with feeding where necessary.
- Modify food texture for people with chewing or swallowing difficulties under professional guidance.

Examples of suitable meals, depending on the condition

- Soft porridge.
- Vegetable soup.
- Mashed potatoes.
- Soft rice with vegetables.
- Well-cooked beans.
- Soft fruit.
- Steamed fish.

K. Convalescents

Convalescents are people who are recovering from illness, injury, surgery or other health conditions.

They may require special meals to support recovery and restoration of strength.

Nutritional requirements

1. **Proteins:** Needed for tissue repair and recovery.
2. **Energy:** Supports normal body functions and recovery processes.
3. **Vitamins:** Support immunity and normal metabolism.
4. **Minerals:** Iron, zinc and other minerals support various recovery processes.

5. **Water:** Maintains hydration and supports normal body functions.

6. **Fibre:** Helps maintain healthy digestion, particularly when activity levels are reduced.

Guidelines for meal planning

- Follow medical and nutritional advice.
- Provide nutritious and balanced meals.
- Serve food in small portions if appetite is reduced.
- Include protein-rich foods.
- Provide adequate fluids where permitted.
- Use suitable cooking methods.
- Maintain food hygiene.
- Avoid foods that worsen the person's symptoms.
- Introduce normal foods gradually according to recovery and tolerance.

Examples of suitable meals

- Light vegetable soup with chicken.
- Porridge with milk.
- Soft rice and fish.
- Mashed potatoes and vegetables.
- Yoghurt and ripe fruits.

L. Sedentary workers

Sedentary workers are individuals whose occupations involve prolonged sitting or limited physical activity.

Examples include:

- Office workers.
- Accountants.
- Receptionists.
- Computer operators.
- Drivers.
- Administrative staff.

Their energy requirements may be lower than those of people performing strenuous manual work.

Nutritional requirements

1. **Carbohydrates:** Should provide adequate energy, with preference for whole grains and other nutrient-rich sources.

2. **Proteins:** Maintain muscles and repair body tissues.

3. **Healthy fats:** Support body functions and absorption of fat-soluble vitamins.

4. **Vitamins and minerals:** Support metabolism, immunity and general health.

5. **Fibre:** Promotes healthy digestion and bowel movement.

6. **Water:** Maintains hydration.

Guidelines for planning meals

- Avoid excessive energy intake relative to activity level.
- Include vegetables and fruits.
- Choose whole grains.
- Include lean protein sources.
- Limit excessive sugary drinks and snacks.
- Moderate portions of foods high in fats and added sugars.
- Encourage physical activity.
- Drink adequate safe water.

Examples of suitable meals

- Breakfast: Wholemeal bread, boiled egg and fruit.
- Lunch: Rice, beans and vegetables.
- Dinner: Sweet potatoes, fish and spinach.
- Snacks: Fruit, yoghurt or a small portion of groundnuts.

Summary table: Nutritional needs of different groups

Group	Main nutritional considerations
Children 6–24 months	Breast milk, complementary foods, energy, protein, iron and zinc
Children 24–59 months	Energy, protein, calcium, iron and vitamins
Adolescents	Increased energy, protein, iron and calcium
Expectant mothers	Folate, iron, protein, calcium and iodine
Breastfeeding mothers	Additional energy, protein, iodine and fluids
Older persons	Protein, calcium, vitamin D, fibre and hydration
Manual workers	Adequate energy, carbohydrates, protein and fluids
Sports persons	Carbohydrates, protein, hydration and electrolytes
Vegetarians	Protein, iron, B12, calcium, zinc and vitamin D
Invalids	Individualised nutrition based on medical needs
Convalescents	Energy, protein, fluids and nutrients for recovery
Sedentary workers	Balanced meals, fibre and appropriate energy intake

1.1.6 BALANCED DIET AND ITS IMPORTANCE IN FAMILY MEAL PLANNING

A balanced diet is a diet that contains different types of foods in appropriate quantities and proportions to provide the nutrients required by the body for health and normal functioning.

A balanced diet should provide:

- Carbohydrates.
- Proteins.

- Fats and oils.
- Vitamins.
- Minerals.
- Fibre.
- Water.

Main food groups and their functions



A. Carbohydrates

Carbohydrates are nutrients that provide the body with its main source of energy.

Examples:

- Maize.
- Rice.
- Wheat.
- Millet.

- Sorghum.
- Potatoes.
- Sweet potatoes.
- Bananas.

Functions:

1. Provide energy for physical activities.
2. Supply energy for normal body processes.
3. Help spare proteins from being used as an energy source.
4. Provide dietary fibre when obtained from whole grains, fruits and vegetables.

B. Proteins

Proteins are body-building nutrients required for growth, development and repair of body tissues.

Sources:

- Eggs.
- Fish.
- Meat.
- Milk.
- Beans.
- Peas.
- Soya beans.
- Lentils.

Functions:

1. Support growth and development.
2. Repair worn-out and damaged tissues.
3. Help produce enzymes.
4. Form antibodies that support immunity.
5. Help form some hormones.
6. Support the maintenance of muscles and other body structures.

C. Fats and oils

Fats and oils are concentrated sources of energy.

Sources:

- Avocado.
- Groundnuts.
- Sunflower seeds.

- Sesame seeds.
- Vegetable oils.
- Butter.
- Fatty fish.

Functions:

1. Provide concentrated energy.
2. Help insulate the body against heat loss.
3. Protect internal organs.
4. Assist absorption of vitamins A, D, E and K.
5. Supply essential fatty acids.
6. Contribute to the structure of cell membranes.

D. Vitamins

Vitamins are organic nutrients required in small amounts for normal body functioning.

Examples and functions:

Vitamin	Main function	Food sources
Vitamin A	Supports vision and immunity	Carrots, pumpkin, mangoes
Vitamin B group	Supports energy metabolism and nerve function	Whole grains, legumes, eggs
Vitamin C	Supports tissue formation and iron absorption	Oranges, guavas, tomatoes
Vitamin D	Supports calcium absorption	Eggs, oily fish, fortified foods
Vitamin E	Protects cells from oxidative damage	Nuts, seeds and vegetable oils
Vitamin K	Supports normal blood clotting	Green leafy vegetables

E. Minerals

Minerals are inorganic nutrients required for normal growth, development and body functioning.

Examples:

Mineral	Function	Food sources
Calcium	Builds strong bones and teeth	Milk, yoghurt, small fish
Iron	Formation of haemoglobin	Meat, beans, spinach
Iodine	Production of thyroid hormones	Iodised salt, fish
Zinc	Growth and immunity	Meat, eggs, legumes
Potassium	Fluid balance and muscle function	Bananas, potatoes, beans
Phosphorus	Bones, teeth and energy metabolism	Milk, fish, meat

F. Fibre

Dietary fibre is the indigestible part of plant foods that supports normal bowel functioning and digestive health.

Sources:

- Wholemeal cereals.
- Fruits.
- Vegetables.
- Beans.
- Peas.
- Lentils.

Functions:

1. Helps prevent constipation.
2. Promotes healthy bowel movement.
3. Supports digestive health.
4. Helps regulate blood glucose levels.
5. Contributes to a feeling of fullness.
6. Supports healthy cholesterol levels.

G. Water

Water is an essential nutrient required for life and normal body functioning.

Sources:

- Drinking water.
- Milk.
- Soups.
- Fruits.
- Vegetables.

Functions:

1. Regulates body temperature.
2. Transports nutrients around the body.
3. Assists digestion.
4. Helps remove waste products.
5. Maintains fluid balance.
6. Lubricates joints and body tissues.
7. Supports normal chemical reactions in the body.

Importance of a balanced diet

1. Promotes healthy growth and development.
2. Provides energy for daily activities.
3. Supports immunity.
4. Maintains healthy bones and teeth.
5. Supports normal brain functioning.
6. Helps prevent nutritional deficiencies.
7. Promotes healthy digestion.
8. Supports tissue repair.
9. Maintains healthy body weight.
10. Reduces the risk of diet-related diseases.

1.1.7 PLANNING A BALANCED MENU FOR THE FAMILY

A menu should be carefully planned to meet the nutritional requirements of family members while considering available resources.

Principles of good menu planning

1. **Nutritional balance:** Include foods from different food groups.

2. **Variety:** Avoid repeating the same dishes too frequently.

3. **Colour:** Combine foods with different natural colours to improve appearance and encourage consumption.

4. **Flavour:** Select foods with complementary flavours.

5. **Texture:** Combine different textures such as soft, crisp, smooth and firm foods.

6. **Seasonality:** Use foods that are in season and readily available.

7. **Economy:** Work within the available household budget.

8. **Suitability:** Consider the age, health and activity level of consumers.

9. **Time:** Select meals that can be prepared within the available time.

10. **Cooking methods:** Use appropriate methods such as boiling, steaming, grilling and stewing.

11. **Equipment:** Consider the cooking equipment available.

12. **Food safety:** Select foods that can be stored and prepared safely.

Steps followed when planning family meals

Step 1: Identify family members

Determine the number of people to be served and their ages, health conditions and nutritional requirements.

Step 2: Establish nutritional needs

Identify the nutrients required by each family member.

Step 3: Determine the household budget

Establish the amount of money available for purchasing food.

Step 4: Assess food availability

Identify foods that are available locally and those that are in season.

Step 5: Consider food preferences

Find out the food preferences, dislikes, allergies and cultural restrictions of family members.

Step 6: Select suitable dishes

Choose dishes that provide different nutrients and complement one another.

Step 7: Prepare the menu

Arrange the selected foods into appropriate meals.

Step 8: Determine food quantities

Calculate the quantities required according to the number of people to be served.

Step 9: Prepare a shopping list

List the ingredients required for the planned meals.

Step 10: Organise preparation and cooking

Determine the preparation methods, equipment and time required.

Step 11: Evaluate the menu

Check whether the menu is balanced, affordable, varied, practical and suitable for all family members.

Sample one-day family menu

FAMILY OF FIVE — TWO ADULTS AND THREE CHILDREN

Meal	Suggested menu
Breakfast	Millet porridge, boiled eggs and bananas
10 o'clock tea	Milk and wholemeal bread
Lunch	Rice, beans, sukuma wiki and orange
4 o'clock tea	Sweet potatoes and drinking water
Dinner	Ugali, fish stew, spinach and avocado

Reasons for selecting the menu

- It contains different food groups.
- It includes both plant and animal protein sources.
- It provides energy from cereals and root crops.
- It includes fruits and vegetables.
- It uses locally available Kenyan foods.
- It provides variety in colour, flavour and texture.
- It can be adjusted to meet individual family needs.

Sample weekly family menu

Day	Breakfast	Lunch	Dinner
Monday	Porridge, egg and banana	Rice, beans and cabbage	Ugali, fish and spinach
Tuesday	Sweet potatoes and milk	Githeri and avocado	Chapati, green grams and vegetables
Wednesday	Wholemeal bread, egg and fruit	Ugali, beef stew and sukuma wiki	Rice, lentils and carrots
Thursday	Millet porridge and groundnuts	Mashed potatoes, chicken and vegetables	Ugali, beans and managu
Friday	Arrowroots, milk and fruit	Rice, fish and vegetables	Chapati, peas and cabbage
Saturday	Pancakes, milk and pawpaw	Githeri and vegetable salad	Ugali, chicken stew and spinach
Sunday	Boiled maize, eggs and fruit	Rice, beef stew and mixed vegetables	Sweet potatoes, beans and vegetables

The quantities and food choices should be adjusted to individual nutritional requirements, household resources and preferences.

1.1.8 PLANNING AND COOKING MEALS FOR DIFFERENT FAMILY GROUPS

Meal planning should be followed by appropriate food preparation and cooking to ensure that the selected foods retain their nutritional value and are safe for consumption.

A. Food preparation

Food preparation refers to the activities carried out before cooking food.

These activities include:

1. Selecting ingredients.
2. Sorting cereals and legumes.
3. Washing fruits and vegetables.
4. Peeling suitable foods.
5. Chopping and slicing ingredients.
6. Measuring ingredients.
7. Marinating foods where appropriate.

8. Soaking legumes where necessary.
9. Preparing cooking utensils.
10. Arranging ingredients in order of use.

B. Common methods of cooking



1. Boiling

Boiling is cooking food in a liquid at its boiling point.

Examples:

- Boiling eggs.
- Boiling potatoes.
- Cooking beans.
- Cooking maize.

Advantages:

- Simple to carry out.
- Requires relatively little equipment.
- Suitable for many food types.
- Does not require added cooking oil.

Disadvantages:

- Some water-soluble vitamins may be lost into the cooking water.
- Excessive boiling may affect food texture and flavour.
- Some foods may become overcooked.

2. Steaming

Steaming is cooking food using the heat of steam produced by boiling water.

Examples:

- Steamed vegetables.
- Steamed fish.
- Steamed sweet potatoes.

Advantages:

- Requires little or no added fat.
- Helps retain the shape of foods.
- Reduces loss of some water-soluble nutrients compared with prolonged boiling in excess water.
- Produces tender foods.

3. Stewing

Stewing is cooking food slowly in a small quantity of liquid.

Examples:

- Beef stew.
- Chicken stew.
- Bean stew.
- Vegetable stew.

Advantages:

- Helps tenderise tough foods.
- Allows flavours to develop.
- Cooking liquid can be consumed with the food.
- Suitable for preparing mixed dishes.

4. Roasting

Roasting is cooking food using dry heat, usually in an oven or over a fire.

Examples:

- Roasted maize.
- Roasted meat.
- Roasted potatoes.

Advantages:

- Develops an attractive colour.
- Produces distinctive flavours.
- May require little added fat.

5. Grilling

Grilling is cooking food using direct radiant heat.

Examples:

- Grilled fish.
- Grilled chicken.
- Grilled vegetables.

Advantages:

- Requires little added fat.
- Produces an appealing flavour.
- Can be a quick cooking method for suitable foods.

6. Frying

Frying is cooking food in hot fat or oil.

Types:

- Deep frying.
- Shallow frying.
- Stir-frying.

Examples:

- Fried eggs.
- Fried potatoes.
- Fried fish.
- Stir-fried vegetables.

Advantages:

- Can produce crisp textures.
- Develops attractive colours and flavours.
- May be relatively quick.

Disadvantages:

- May increase the fat and energy content of foods.
- Excessive consumption of deep-fried foods may negatively affect health.
- Requires careful control of oil temperature to prevent burning.

7. Baking

Baking is cooking food using dry heat in an enclosed oven.

Examples:

- Bread.

- Cakes.
- Baked potatoes.
- Pastries.

Advantages:

- Suitable for a variety of foods.
- Can produce attractive products.
- Some baked dishes require little added fat.

C. Factors to consider when selecting a cooking method

1. Type of food.
2. Nutritional value of the food.
3. Available cooking equipment.
4. Available fuel.
5. Time available.
6. Desired flavour.
7. Desired texture.
8. Cost of preparation.
9. Health requirements of the consumer.
10. Number of people to be served.

1.1.9 FOOD HYGIENE AND SAFETY DURING MEAL PREPARATION

Food hygiene refers to the practices and conditions necessary to maintain food safety from purchasing and handling to preparation, cooking, serving and storage.



Importance of food hygiene

1. Prevents food contamination.
2. Reduces the risk of food poisoning.

3. Protects consumers from foodborne diseases.
4. Maintains food quality.
5. Promotes good health.
6. Extends the safe storage life of suitable foods.
7. Ensures safe food handling practices.
8. Promotes consumer confidence.

Personal hygiene practices

- Wash hands with soap and safe running water before handling food.
- Wash hands after using the toilet.
- Keep fingernails short and clean.
- Wear clean clothing or an apron.
- Cover cuts and wounds with waterproof dressings.
- Cover hair where necessary.
- Avoid handling food when suffering from illnesses that can contaminate it.
- Avoid coughing or sneezing directly over food.
- Avoid touching ready-to-eat foods unnecessarily.

Kitchen hygiene practices

- Clean preparation surfaces before and after use.
- Wash utensils thoroughly.
- Use safe drinking water.
- Dispose of waste appropriately.
- Keep pests away from food.
- Clean cooking equipment regularly.
- Store food in clean containers.
- Maintain proper ventilation.
- Keep floors dry and free from obstructions.

Food safety practices

1. Prevent cross-contamination

Cross-contamination is the transfer of harmful microorganisms from one food, surface or object to another.

Prevention:

- Separate raw meat from cooked food.
- Use separate chopping boards where possible.
- Wash utensils between different tasks.

- Store raw and cooked foods separately.

2. Cook food thoroughly

- Cook meat, fish, poultry and eggs properly.
- Ensure food reaches safe cooking temperatures.
- Reheat leftovers thoroughly.
- Avoid eating undercooked high-risk foods.

3. Store food safely

- Refrigerate perishable foods promptly.
- Keep dry foods in airtight containers.
- Store raw and cooked foods separately.
- Observe expiry and use-by dates.
- Avoid keeping cooked foods at room temperature for prolonged periods.

4. Wash food properly

- Wash fruits and vegetables using safe water.
- Clean food preparation equipment.
- Remove dirt and damaged portions of produce.
- Avoid washing raw meat because splashing may spread harmful microorganisms.

5. Use safe water

- Use clean and safe water for drinking and cooking.
- Treat water where its safety is uncertain.
- Store drinking water in clean, covered containers.

1.1.10 IMPORTANCE OF PLANNING MEALS FOR DIFFERENT GROUPS OF PEOPLE

Planning meals according to individual nutritional requirements is important because:

1. It ensures that each person receives appropriate nutrients.
2. It supports healthy growth and development in children.
3. It supports the increased nutritional needs of adolescents.
4. It promotes maternal health during pregnancy.
5. It supports breastfeeding and maternal wellbeing.
6. It helps older persons maintain their health and strength.
7. It supports physical performance among sports persons.
8. It provides adequate energy for manual workers.
9. It helps vegetarians obtain essential nutrients.
10. It supports recovery among convalescents.

11. It helps people with medical conditions follow appropriate dietary requirements.
12. It prevents inappropriate food choices.
13. It promotes family health and satisfaction.
14. It encourages responsible use of household resources.

1.1.11 CHALLENGES EXPERIENCED IN FAMILY MEAL PLANNING AND THEIR SOLUTIONS

Challenge	Possible solution
Limited household income	Prioritise affordable, nutritious local foods
Food shortages	Use seasonal foods and appropriate preservation methods
Different food preferences	Involve family members in menu planning
Limited preparation time	Plan meals in advance and prepare ingredients early
Lack of refrigeration	Buy perishable foods in suitable quantities and use safe storage methods
Nutritional deficiencies	Include a variety of food groups
Food wastage	Prepare appropriate portions and store safe leftovers correctly
Limited cooking equipment	Choose dishes that can be prepared using available equipment
Food allergies	Identify allergens and provide safe alternatives
Lack of nutritional knowledge	Seek reliable nutrition education and professional guidance

1.1.12 PRACTICAL ACTIVITY: PLANNING AND PREPARING A BALANCED FAMILY MEAL

Activity: Preparing a balanced Kenyan family lunch

Objective: To develop practical competencies in meal planning, food preparation, cooking, serving and evaluation.

Suggested menu

- Rice.
- Bean stew.
- Sukuma wiki.
- Fresh fruit salad.
- Safe drinking water.



Requirements

Ingredients:

- Rice.
- Beans.
- Onions.
- Tomatoes.
- Sukuma wiki.
- Cooking oil.
- Salt in appropriate amounts.
- Avocado.
- Oranges or other seasonal fruits.
- Safe drinking water.

Equipment:

- Cooking pots.
- Cooking spoons.
- Knives.
- Chopping boards.
- Bowls.
- Plates.
- Measuring cups.
- Serving spoons.
- Cooking stove.

Procedure

1. Identify the number of people to be served.
2. Determine the quantities of ingredients required.
3. Prepare a shopping list.
4. Purchase fresh and safe ingredients.
5. Wash hands and clean the work surfaces.
6. Sort and wash the beans.
7. Cook the beans until tender.
8. Wash and prepare the vegetables.
9. Cook the rice using an appropriate method.
10. Prepare the bean stew.

11. Prepare the sukuma wiki.
12. Wash, peel and cut the fruits appropriately.
13. Arrange the food attractively.
14. Serve the meal hygienically.
15. Clean the work area and utensils.
16. Evaluate the meal based on taste, appearance, texture, nutritional value and cost.

Expected competencies developed

- Communication and collaboration.
- Critical thinking and problem-solving.
- Creativity and imagination.
- Self-efficacy.
- Digital literacy through nutritional research.
- Learning to learn.
- Citizenship through responsible food choices.
- Environmental awareness through waste reduction.

Learner reflection

After the practical activity, learners should be able to explain:

1. Why the selected foods form a balanced meal.
2. How the meal meets the needs of different family members.
3. How the preparation methods influence nutritional value.
4. How food hygiene was maintained.
5. How food wastage was minimised.
6. How the meal could be modified for a vegetarian, older person or adolescent.

1.1.13 KEY TERMS AND CONCEPTS SUMMARY

Term	Meaning
Meal planning	Deciding in advance what foods to prepare and serve
Meal management	Organising resources and activities involved in providing meals
Menu	A list of foods to be served
Course	A separate part of a meal
Starter	A light dish served before the main course
Main course	The principal dish of a meal
Dessert	A dish served at the end of a meal
Accompaniment	A food served alongside the main dish
Condiments	Substances added to improve food flavour
Balanced diet	A diet providing essential nutrients in appropriate amounts
Nutrient	A substance in food required for body functions

Convalescent	A person recovering from illness
Sedentary worker	A person whose occupation involves limited physical activity
Vegetarian	A person who excludes meat and fish from their diet
Food hygiene	Practices that maintain food safety and cleanliness
Brunch	A meal combining breakfast and lunch

REVISION EXERCISES

SUB-STRAND 1.1: PLANNING FAMILY MEALS

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Instructions: Answer all questions by selecting the correct answer from the alternatives A, B, C and D. Each question carries 1 mark.

1. What is meant by meal planning?

A. Preparing food without considering nutritional needs.
B. Deciding in advance the foods to be prepared and served.
C. Purchasing food without a shopping list.
D. Cooking different foods at the same time.

2. Which of the following best describes meal management?

A. Arranging and controlling resources used in providing meals.
B. Eating food at regular intervals.
C. Purchasing expensive food products.
D. Serving food without preparation.

3. A list of foods to be served during a particular meal is known as:

A. Recipe.
B. Course.
C. Menu.
D. Condiment.

4. Which of the following is an example of a starter?

A. Ugali and beef stew.
B. Vegetable soup.
C. Fruit pudding.
D. Rice and beans.

5. Which term refers to a sweet dish served at the end of a meal?

A. Accompaniment.
B. Starter.
C. Dessert.
D. Main course.

6. Which of the following is an accompaniment to ugali?

A. Sukuma wiki.
B. Porridge.
C. Fruit juice.
D. Cake.

7. The main purpose of meal planning is to:

A. Increase household expenditure.
B. Promote balanced nutrition and efficient use of resources.
C. Encourage food wastage.
D. Reduce the variety of foods consumed.

8. Which of the following is an important factor to consider when planning family meals?

A. Colour of cooking utensils only.
B. Nutritional requirements of family members.
C. Size of the kitchen only.
D. Number of shops in the neighbourhood only.

9. Which nutrient is particularly important for the formation of haemoglobin?

A. Calcium.
B. Iron.
C. Vitamin D.
D. Iodine.

10. Which of the following food combinations provides a good source of plant protein?

A. Rice and sugar.
B. Beans and green grams.
C. Tea and bread.
D. Mangoes and oranges.

11. Exclusive breastfeeding is recommended for the first:

A. Two months.
B. Four months.
C. Six months.
D. Twelve months.

12. Complementary feeding should generally begin when a child reaches:

A. Two months.
B. Four months.
C. Six months.
D. Eighteen months.

13. Which nutrient is particularly important for the development of strong bones and teeth?

A. Calcium.
B. Vitamin C.
C. Iron.
D. Vitamin B12.

14. Which nutrient is particularly important during early pregnancy for normal neural tube development?

A. Sodium.
B. Folic acid.
C. Vitamin E.
D. Vitamin K.

15. Why do adolescents require adequate iron in their diets?

A. To improve food flavour.
B. To support blood formation and increased growth needs.
C. To increase body fat.
D. To prevent thirst.

16. Which of the following foods is a good source of vitamin C?

A. Cooking oil.
B. Orange.
C. Butter.
D. White sugar.

17. Which group of people generally requires additional energy to support physically demanding activities?

A. Sedentary workers.
B. Manual workers.
C. People who are resting.
D. People with limited physical activity.

18. Which nutrient is the main source of energy during high-intensity physical activity?

A. Carbohydrates.
B. Vitamins.
C. Minerals.
D. Water.

19. A vegetarian who consumes milk and eggs but avoids meat and fish is classified as:

A. Vegan.
B. Lacto-vegetarian.
C. Lacto-ovo vegetarian.
D. Ovo-vegetarian.

20. Which nutrient requires special attention in a strictly vegan diet because reliable natural unfortified plant sources are lacking?

A. Vitamin C.
B. Vitamin B12.
C. Carbohydrates.
D. Fibre.

21. Which of the following foods is a good source of dietary fibre?

A. Refined sugar.
B. Wholemeal cereals.
C. Cooking oil.
D. Butter.

22. Which cooking method uses steam to cook food?

A. Roasting.
B. Frying.
C. Steaming.
D. Grilling.

23. One disadvantage of prolonged boiling of vegetables in excess water is that:

A. All nutrients are destroyed.
B. Some water-soluble vitamins may be lost.
C. Proteins become poisonous.
D. Minerals are converted into fats.

24. Which practice helps prevent cross-contamination during food preparation?

A. Using the same unwashed chopping board for raw meat and salad.
B. Storing raw meat above cooked food.
C. Using separate chopping boards for raw and ready-to-eat foods.
D. Leaving cooked food uncovered.

25. Which of the following is the most appropriate meal for an older person with chewing difficulties?

A. Hard roasted maize.
B. Tough roasted meat.
C. Soft rice and well-cooked vegetables.
D. Whole raw carrots.

26. Why should food be planned according to the household budget?

A. To encourage expensive food purchases.
B. To ensure available money is used efficiently.
C. To eliminate all protein foods.
D. To avoid buying vegetables.

27. Which of the following is a characteristic of a good menu?

A. Repetition of the same foods every day.
B. Lack of nutritional balance.
C. Variety in colour, flavour and texture.
D. Use of expensive foods only.

28. Which nutrient helps the body absorb vitamins A, D, E and K?

A. Fat.
B. Fibre.
C. Iron.
D. Water.

29. What is the main reason for providing adequate fluids to sports persons?

A. To increase body fat.
B. To maintain hydration and replace fluid losses.
C. To eliminate the need for food.
D. To prevent muscle development.

30. Which of the following practices is most appropriate when preparing meals for a convalescent?

A. Ignoring the person's medical dietary requirements.
B. Providing only sugary foods.
C. Following medical advice and providing suitable nutritious meals.
D. Avoiding all protein-rich foods.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Instructions: Answer all questions. Write your answers clearly and provide relevant examples where necessary.

QUESTION 1: MEANING AND IMPORTANCE OF MEAL PLANNING (10 MARKS)

a) Define the following terms as used in meal planning:

i. Meal planning. (2 marks)

ii. Menu. (1 mark)

iii. Accompaniment. (1 mark)

b) Explain six importance of planning meals for a family. (6 marks)

QUESTION 2: FACTORS CONSIDERED WHEN PLANNING FAMILY MEALS (8 MARKS)

a) Explain five factors that a household should consider when planning meals for its members. (5 marks)

b) State three ways through which meal planning helps a family to manage its financial resources. (3 marks)

QUESTION 3: NUTRITIONAL REQUIREMENTS OF DIFFERENT FAMILY GROUPS (8 MARKS)

a) Explain four nutritional requirements of expectant mothers. (4 marks)

b) Describe four ways of ensuring that meals prepared for older persons meet their nutritional needs. (4 marks)

QUESTION 4: TYPES OF MEALS AND BALANCED DIETS (8 MARKS)

a) Differentiate between the following types of meals:

i. Breakfast and brunch. (2 marks)

ii. Starter and dessert. (2 marks)

b) Explain four characteristics of a balanced diet. (4 marks)

QUESTION 5: MEAL PREPARATION, COOKING AND FOOD HYGIENE (8 MARKS)

a) Explain four cooking methods that can be used when preparing family meals. (4 marks)

b) Describe four food hygiene practices that should be observed when preparing meals at home. (4 marks)

QUESTION 6: PRACTICAL APPLICATION OF MEAL PLANNING (8 MARKS)

A family consisting of two parents, an adolescent boy, a five-year-old child and an older grandmother wants to prepare a balanced lunch using locally available foods.

a) Suggest a suitable balanced lunch menu for the family. (3 marks)

b) Explain three considerations that should guide the selection of foods for this family. (3 marks)

c) State two ways of minimising food wastage during meal preparation. (2 marks)

MARKING SCHEME

SUB-STRAND 1.1: PLANNING FAMILY MEALS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	A
3	C
4	B
5	C
6	A
7	B
8	B
9	B
10	B
11	C
12	C
13	A
14	B
15	B
16	B
17	B
18	A
19	C
20	B
21	B
22	C
23	B
24	C
25	C
26	B
27	C

28	A
29	B
30	C

Total: 30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: MEANING AND IMPORTANCE OF MEAL PLANNING (10 MARKS)

a) Definitions

i. Meal planning (2 marks)

- The process of deciding in advance the types of foods and meals to be prepared and served to individuals or a family over a given period. (2 marks)

ii. Menu (1 mark)

- A list of foods and dishes to be served during a particular meal or over a specified period. (1 mark)

iii. Accompaniment (1 mark)

- A food item served alongside the main dish to complement it. (1 mark)

b) Importance of planning meals for a family (6 marks)

Award 1 mark for each well-explained point. Any six.

1. Promotes balanced nutrition: Ensures that family members consume foods containing all the essential nutrients in appropriate proportions.

2. Saves money: Helps families select affordable foods and avoid unnecessary expenditure.

3. Prevents food wastage: Ensures that appropriate quantities of food are purchased and prepared.

4. Saves time and energy: Enables the household to organise food purchases and preparation activities in advance.

5. Provides variety: Encourages the inclusion of different foods, colours, flavours and textures in meals.

6. Meets individual nutritional needs: Ensures that meals cater for children, adolescents, expectant mothers, older persons and other family members.

7. Promotes good health: Helps prevent nutritional deficiencies and diet-related diseases.

8. Encourages proper use of available resources: Ensures efficient utilisation of available food, equipment, money and labour.

9. Reduces meal preparation stress: Enables the person responsible for cooking to prepare ingredients and organise activities beforehand.

10. Promotes regular eating habits: Helps family members maintain appropriate meal times.

Maximum: 6 marks

QUESTION 2: FACTORS CONSIDERED WHEN PLANNING FAMILY MEALS (8 MARKS)

a) Factors to consider when planning family meals (5 marks)

Award 1 mark for each correctly explained factor. Any five.

1. Age of family members: Children require foods that support growth and development, while older persons may need easily digestible and soft foods.

2. Nutritional requirements: Meals should provide nutrients required by different family members according to their physiological needs.

3. Family income and budget: Foods selected should be affordable and within the household's financial ability.

4. Food availability: Locally available and seasonal foods should be considered when preparing menus.

5. Food preferences: The likes and dislikes of family members should be considered to encourage food consumption.

6. Health conditions: Individuals with conditions such as diabetes, hypertension or food allergies may require special dietary considerations.

7. Occupation and physical activity: People engaged in strenuous activities require more energy than those with sedentary lifestyles.

8. Religious and cultural beliefs: Food choices should respect the religious and cultural practices of family members.

9. Time available: The complexity of meals should depend on the time available for preparation and cooking.

10. Cooking facilities and equipment: Available cooking equipment and fuel should influence the choice of meals.

b) Ways meal planning helps manage financial resources (3 marks)

Award 1 mark for each correct response. Any three.

1. Enables the family to prepare a shopping list and avoid impulse buying.
2. Encourages the purchase of affordable and locally available foods.
3. Reduces food wastage and unnecessary replacement of food.
4. Encourages bulk purchasing of non-perishable foods where economical.
5. Helps the family compare prices before purchasing food.
6. Prevents unnecessary expenditure on expensive convenience foods.
7. Ensures that available money is allocated appropriately for different food groups.

QUESTION 3: NUTRITIONAL REQUIREMENTS OF DIFFERENT FAMILY GROUPS (8 MARKS)

a) Nutritional requirements of expectant mothers (4 marks)

Award 1 mark for each correctly explained requirement. Any four.

1. Iron: Required for haemoglobin formation and to support increased blood volume during pregnancy. Sources include liver, beans, meat and dark green leafy vegetables.

2. Folic acid: Essential for normal development of the baby's neural tube and helps prevent neural tube defects. Sources include green leafy vegetables, beans and fortified foods.

3. Calcium: Required for the development of the baby's bones and teeth and maintenance of the mother's bone health. Sources include milk, yoghurt and small fish eaten with bones.

4. Protein: Needed for the growth and development of foetal tissues and maternal body tissues. Sources include eggs, fish, meat, milk and legumes.

5. Energy-giving foods: Carbohydrates and healthy fats provide energy needed to support pregnancy and daily activities.

6. Vitamin C: Supports tissue development, immunity and absorption of iron from plant foods. Sources include oranges, guavas and tomatoes.

7. Adequate fluids: Help maintain hydration and support normal body functions.

b) Ways of ensuring meals for older persons meet their nutritional needs (4 marks)

Award 1 mark for each correctly explained point. Any four.

1. Provide soft foods: Prepare foods such as well-cooked vegetables, mashed potatoes and soft cereals for those with chewing difficulties.

2. Include protein-rich foods: Provide eggs, milk, fish, beans and lean meat to support the maintenance and repair of body tissues.

3. Provide calcium-rich foods: Include milk, yoghurt and other calcium-rich foods to support bone health.

4. Include fibre-rich foods: Provide fruits, vegetables, whole grains and legumes to help prevent constipation.

5. Provide adequate fluids: Encourage regular consumption of safe drinking water and other suitable fluids.

6. Prepare small, frequent meals: Offer manageable portions throughout the day where large meals are difficult to consume.

7. Reduce excessive salt and unhealthy fats: Prepare meals that support healthy blood pressure and cardiovascular health.

8. Consider individual health conditions: Follow medical and dietary advice when preparing meals for older persons with specific health conditions.

QUESTION 4: TYPES OF MEALS AND BALANCED DIETS (8 MARKS)

a) Differences between types of meals

i. Breakfast and brunch (2 marks)

- Breakfast: The first meal of the day, usually eaten in the morning after waking up. (1 mark)
- Brunch: A meal that combines breakfast and lunch and is usually eaten between the normal breakfast and lunch periods. (1 mark)

ii. Starter and dessert (2 marks)

- Starter: A small dish served at the beginning of a meal to stimulate appetite. (1 mark)
- Dessert: A sweet dish or fruit served at the end of a meal. (1 mark)

b) Characteristics of a balanced diet (4 marks)

Award 1 mark for each correctly explained characteristic. Any four.

1. Adequacy: Provides sufficient amounts of essential nutrients to meet the body's requirements.

2. Variety: Contains different types of foods from various food groups.

3. Balance: Contains nutrients in appropriate proportions without excessive amounts of any particular nutrient.

4. Moderation: Avoids excessive consumption of sugar, salt and unhealthy fats.

5. Nutritional suitability: Meets the nutritional requirements of an individual according to age, sex, activity level and health condition.

6. Appropriate energy content: Provides sufficient energy to support normal body activities and maintain a healthy body weight.

QUESTION 5: MEAL PREPARATION, COOKING AND FOOD HYGIENE (8 MARKS)

a) Cooking methods used when preparing family meals (4 marks)

Award 1 mark for each correctly explained method. Any four.

1. Boiling: Cooking food in water or another liquid at boiling point. Examples include cooking rice, potatoes and beans.

2. Steaming: Cooking food using steam from boiling water without immersing it directly in water. Examples include vegetables and fish.

3. Frying: Cooking food in hot fat or oil. Examples include frying eggs, fish and potatoes.

4. Roasting: Cooking food using dry heat, usually in an oven or over an open fire. Examples include roasting meat and maize.

5. Grilling: Cooking food using direct radiant heat. Examples include grilling fish, meat and chicken.

6. Baking: Cooking food using dry heat in an oven. Examples include cakes, bread and pastries.

7. Stewing: Cooking food slowly in a small amount of liquid, usually in a covered saucepan. Examples include beef stew and vegetable stew.

8. Poaching: Cooking food gently in a small amount of liquid below boiling point. Examples include poached eggs and fish.

b) Food hygiene practices when preparing meals at home (4 marks)

Award 1 mark for each correctly described practice. Any four.

1. Washing hands: Wash hands thoroughly with soap and clean running water before handling food and after handling raw meat or visiting the toilet.

2. Cleaning utensils: Wash chopping boards, knives, plates and other cooking equipment before and after use.

3. Separating raw and cooked foods: Use separate utensils and chopping boards to prevent cross-contamination.

4. Washing fruits and vegetables: Clean fresh produce using safe running water before preparation and consumption.

5. Proper food storage: Store perishable foods under refrigeration and keep dry foods in clean, dry containers.

6. Thorough cooking: Cook foods thoroughly to destroy harmful microorganisms.

7. Covering food: Keep prepared food covered to protect it from flies, dust and other contaminants.

8. Using safe water: Use clean, treated or boiled water for food preparation and drinking.

9. Maintaining personal hygiene: Wear clean clothing, keep fingernails short and cover cuts when handling food.

10. Proper waste disposal: Dispose of food waste in covered bins and maintain a clean kitchen environment.

QUESTION 6: PRACTICAL APPLICATION OF MEAL PLANNING (8 MARKS)

a) Suitable balanced lunch menu for the family (3 marks)

Accept any suitable balanced menu using locally available foods.

Suggested menu:

- Main dish: Ugali.
- Protein dish: Beef stew or beans.
- Vegetable accompaniment: Sukuma wiki and carrots.
- Fruit: Orange or banana.
- Drink: Safe drinking water.

Mark allocation:

1. Energy-giving food such as ugali, rice, potatoes or sweet potatoes. (1 mark)
2. Protein-rich food such as beans, beef, fish or eggs. (1 mark)
3. Vegetables and/or fruits to provide vitamins, minerals and fibre. (1 mark)

b) Considerations when selecting foods for the family (3 marks)

Award 1 mark for each correctly explained consideration. Any three.

1. Age differences: The five-year-old child requires foods suitable for growth and development, while the grandmother may require soft and easily chewed foods.

2. Nutritional requirements: The adolescent boy requires adequate energy, protein, iron and other nutrients to support rapid growth and development.

3. Food preferences: The family members' likes, dislikes and eating habits should be considered.

4. Affordability: Foods should be selected according to the family's available budget.

5. Food availability: Locally available and seasonal foods should be prioritised.

6. Health conditions: Any allergies, illnesses or dietary restrictions among family members should be considered.

7. Physical activity: The energy requirements of family members should be considered according to their daily activities.

c) Ways of minimising food wastage during meal preparation (2 marks)

Award 1 mark for each correct response. Any two.

1. Prepare only the quantities of food required by the family.
2. Plan meals in advance and prepare a shopping list.
3. Store leftover food properly for safe consumption later.
4. Use edible parts of vegetables and fruits appropriately.
5. Purchase perishable foods in quantities that can be consumed before spoilage.
6. Use leftover ingredients creatively in other meals.
7. Observe proper food storage methods to prevent spoilage.

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.2: MEAL SERVICE



1.2.1 INTRODUCTION TO MEAL SERVICE

Meal service is an important aspect of Home Science that involves presenting and serving prepared food and beverages to individuals or groups in an attractive, hygienic, organised and appropriate manner.

It is the process through which cooked food is transferred from the kitchen or preparation area to the consumers using suitable serving methods, equipment and procedures.

Meal service is practised in:

- Homes.
- Restaurants.
- Hotels.
- Schools.
- Hospitals.
- Catering establishments.
- Conferences and social events.
- Religious gatherings.
- Boarding institutions.

In the Kenyan context, meal service is practised during ordinary family meals, weddings, graduation celebrations, school functions, community gatherings and formal occasions.

For example, during a family gathering, food may be placed at the centre of the dining table for family members to serve themselves. In a hotel, waiters may serve individual portions directly to customers.

Effective meal service requires proper table setting, food presentation, personal hygiene, table etiquette and appropriate choice of service style.

1.2.2 MEANING OF KEY TERMS USED IN MEAL SERVICE

1. Meal service

Meal service refers to the manner in which prepared food and beverages are presented and served to consumers.

2. Food presentation

Food presentation is the arrangement and display of food to make it visually attractive and appealing before consumption.

3. Table setting

Table setting refers to the systematic arrangement of tableware, cutlery, glassware, table linen and other accessories on a dining table in readiness for a meal.

4. Tableware

Tableware refers to the items used when serving and consuming meals.

Examples:

- Plates.
- Bowls.
- Cups.
- Saucers.
- Serving dishes.
- Platters.

5. Cutlery

Cutlery refers to eating and serving utensils, usually made of metal or other suitable materials.

Examples:

- Forks.
- Knives.
- Spoons.
- Serving spoons.
- Serving forks.

6. Crockery

Crockery refers to eating and serving vessels made mainly from ceramic materials.

Examples:

- Dinner plates.
- Side plates.
- Soup bowls.
- Cups.
- Saucers.

7. Glassware

Glassware refers to drinking vessels and other serving items made from glass.

Examples:

- Water glasses.
- Juice glasses.
- Tumblers.
- Goblets.

8. Table linen

Table linen refers to fabric materials used on dining tables to protect surfaces and improve appearance.

Examples:

- Tablecloths.
- Table runners.
- Napkins.
- Table mats.

9. Napkin

A napkin is a piece of cloth or paper used during meals to wipe the mouth and fingers and protect clothing from food spills.

10. Centrepiece

A centrepiece is a decorative item placed at the centre of a dining table to improve its appearance.

Examples:

- Flowers.
- Decorative plants.
- Small fruit arrangements.
- Appropriate candles.
- Decorative baskets.

11. Condiments

Condiments are substances added to food in small quantities to improve flavour.

Examples:

- Salt.
- Pepper.
- Tomato sauce.
- Chilli sauce.
- Vinegar.

12. Garnishing

Garnishing is the decoration of prepared food using suitable edible ingredients to improve its appearance and appeal.

Examples:

- Coriander leaves.
- Tomato slices.
- Lemon wedges.
- Parsley.
- Carrot strips.

13. Table etiquette

Table etiquette refers to the accepted rules of behaviour observed when eating and interacting with others at a dining table.

14. Service equipment

Service equipment refers to the tools and utensils used to present, carry, distribute and serve food.

Examples:

- Serving trays.
- Serving spoons.
- Food tongs.
- Ladles.
- Chafing dishes.
- Food warmers.

1.2.3 IMPORTANCE OF MEAL SERVICE

Meal service is important because it contributes to the enjoyment, attractiveness, safety and organisation of eating occasions.

1. Enhances food presentation

Proper meal service makes food look attractive and appealing.

For example, arranging rice, vegetables and fish neatly on a plate improves the appearance of the meal.

2. Stimulates appetite

Attractively presented food encourages people to eat and enjoy their meals.

3. Promotes good eating habits

Proper service encourages individuals to observe table manners, use appropriate utensils and eat in an organised manner.

4. Maintains food hygiene

Appropriate serving equipment and hygienic handling practices reduce the risk of food contamination.

5. Promotes comfort and convenience

A properly arranged table makes it easier for consumers to access food, cutlery, crockery and drinking water.

6. Demonstrates hospitality

Well-organised meal service communicates care, respect and consideration for guests.

7. Promotes social interaction

Sharing meals encourages communication, family bonding and interaction among people.

8. Improves efficiency

Appropriate service styles reduce confusion, unnecessary movement and delays during meal distribution.

9. Maintains food temperature

Suitable serving equipment helps keep hot foods hot and cold foods appropriately chilled.

10. Promotes portion control

Individual serving methods help control the quantity of food served to each person.

11. Enhances the dining environment

Clean table linen, suitable centrepieces and properly arranged tableware improve the appearance of the dining area.

12. Creates a professional image

Proper meal service promotes a positive impression of restaurants, hotels and catering establishments.

1.2.4 DIFFERENT STYLES OF MEAL SERVICE

A meal service style is the method used to present and distribute food to consumers.

Different styles are used depending on:

- The occasion.
- Number of people being served.
- Type of food.
- Available equipment.
- Available space.
- Number of service personnel.

- Level of formality.
- Time available.
- Consumer preferences.
- Cost of service.

The main styles covered in this sub-strand are:

1. Family service.
2. Buffet service.
3. Blue plate service.
4. Tray service.
5. Silver service.

A. FAMILY SERVICE

Meaning

Family service is a style of meal service in which prepared food is placed in serving dishes at the centre of the dining table, allowing family members or guests to serve themselves.

It is commonly used in Kenyan homes during ordinary family meals and informal gatherings.

How family service is carried out

1. The dining table is cleaned and properly arranged.
2. Plates, cutlery, glasses and napkins are placed at individual positions.
3. Food is prepared and arranged in suitable serving dishes.
4. Serving dishes are placed at the centre of the table.
5. Family members take their positions.
6. The host may invite members to begin serving themselves.
7. Each person uses the appropriate serving spoon or utensil.
8. Food is passed carefully around the table.
9. Members take reasonable portions.
10. Used utensils and dishes are cleared after the meal.

Examples of meals served using family service

- Ugali, sukuma wiki and beef stew.
- Rice, beans and cabbage.
- Chapati, green grams and vegetables.
- Githeri, avocado and fruit.
- Mashed potatoes, fish and vegetables.

Advantages of family service

1. Encourages family interaction and togetherness.

2. Allows individuals to choose the quantities of food they need.
3. Requires fewer serving personnel.
4. Is convenient for informal family meals.
5. Encourages sharing and hospitality.
6. Reduces the need to plate each serving individually.
7. Allows dishes to be passed around easily.
8. Is suitable for small and medium-sized gatherings.

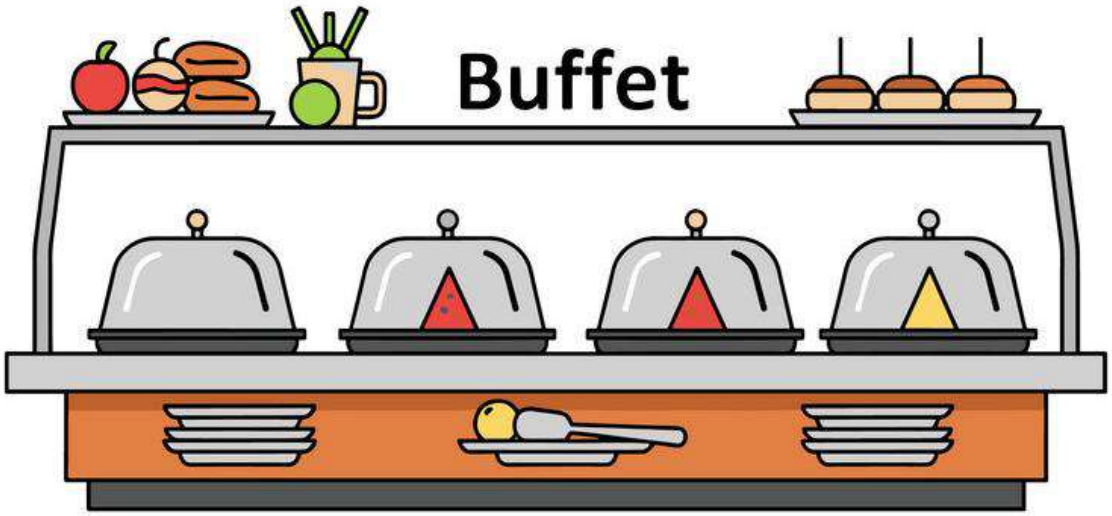
Disadvantages of family service

1. Food may become cold when left on the table for a long time.
2. Some individuals may take more food than they need.
3. Passing dishes may cause accidental spills.
4. It may be difficult for people with limited mobility to reach certain dishes.
5. It requires adequate table space.
6. Serving dishes may become untidy during the meal.
7. It may be less suitable for very formal occasions.

Situations where family service is appropriate

- Ordinary family meals.
- Informal birthday celebrations.
- Family reunions.
- Small social gatherings.
- Meals shared among friends.

B. BUFFET SERVICE



Meaning

Buffet service is a style of meal service in which a variety of prepared foods and beverages are displayed on a serving table, allowing consumers to select and serve themselves.

It is commonly used in hotels, conferences, weddings, restaurants, school events and large social gatherings.

How buffet service is carried out

1. A suitable buffet area is identified.
2. The buffet table is cleaned and arranged.
3. Food is prepared in appropriate quantities.
4. Foods are placed in suitable serving containers.
5. Hot foods are kept hot using suitable food warmers.
6. Cold foods are kept appropriately chilled.
7. Plates and cutlery are placed at convenient positions.
8. Foods are arranged in an orderly manner.
9. Labels may be placed beside dishes to identify foods and allergens.
10. Guests move along the serving line.
11. Each guest selects the desired foods.
12. Serving spoons and tongs are used appropriately.
13. Used serving utensils are replaced or cleaned when necessary.
14. Food stations are monitored and replenished safely.

Examples of foods served using buffet service

- Rice.
- Ugali.
- Chapati.
- Beef stew.
- Chicken.
- Fish.
- Vegetable dishes.
- Salads.
- Fruits.
- Cakes.
- Juices.
- Drinking water.

Advantages of buffet service

1. Allows consumers to choose from a variety of dishes.
2. Reduces the number of waiters required.
3. Is suitable for serving large groups.

4. Encourages individual food selection.
5. Saves time when serving many people.
6. Allows guests to serve themselves.
7. Can accommodate different food preferences.
8. Provides flexibility in food portions.
9. Creates an attractive food display.

Disadvantages of buffet service

1. Requires a large serving area.
2. May lead to food wastage when people take excessive portions.
3. Requires careful temperature control.
4. Food may become contaminated through improper handling.
5. Guests may form long queues.
6. Requires sufficient serving equipment.
7. May be expensive to organise.
8. Some guests may require assistance when serving themselves.

Situations where buffet service is appropriate

- Weddings.
- Conferences.
- Hotel meals.
- Graduation parties.
- School functions.
- Large family gatherings.
- Corporate events.

C. BLUE PLATE SERVICE

Meaning

Blue plate service is a meal service style in which a complete meal is arranged in individual portions on separate plates before being served to consumers.

The meal usually consists of a main food, a protein dish and vegetables arranged together on one plate.

Despite its name, the plate does not necessarily have to be blue.

Characteristics of blue plate service

1. Food is portioned in the kitchen.
2. Each consumer receives an individual plate.
3. Different food components are arranged neatly.
4. Portions are controlled before service.

5. Food is served ready for consumption.
6. It is commonly used for simple restaurant meals and institutional catering.

How blue plate service is carried out

1. The menu is selected.
2. Ingredients are prepared and cooked.
3. Plates are cleaned and arranged.
4. Appropriate food portions are determined.
5. The main food is placed on each plate.
6. Protein foods and vegetables are arranged neatly.
7. Garnishes may be added.
8. Plates are checked for cleanliness and presentation.
9. Meals are served to consumers.
10. Food is served at an appropriate temperature.

Examples

- Ugali, fish and sukuma wiki.
- Rice, chicken and vegetables.
- Mashed potatoes, beef and carrots.
- Chapati, beans and cabbage.

Advantages

1. Provides controlled food portions.
2. Makes food presentation easier.
3. Saves time during distribution.
4. Requires less table space than family service.
5. Is convenient for restaurants and institutions.
6. Makes it easier to calculate food quantities.
7. Reduces direct handling of food by consumers.

Disadvantages

1. Consumers may have limited choices.
2. Requires additional preparation and plating time.
3. Food may cool before reaching consumers.
4. Portion sizes may not suit everyone.
5. It may require more kitchen staff during busy periods.

Situations where blue plate service is appropriate

- Restaurants.
- School dining halls.
- Staff cafeterias.
- Hospitals.
- Small catering events.
- Institutional meals.

D. TRAY SERVICE



Meaning

Tray service is a style of meal service in which food and beverages are arranged on a tray and delivered to consumers at their designated locations.

It is commonly used in hospitals, homes, aircraft, hotels and institutions.

Characteristics of tray service

- Food is arranged on a tray.
- The tray carries the meal and necessary utensils.
- Meals are delivered to individual consumers.
- It is suitable for people who cannot easily access a dining table.
- Food portions can be controlled.
- The tray should be stable, clean and easy to handle.

How tray service is carried out

1. Identify the consumer and their dietary requirements.

2. Prepare the appropriate meal.
3. Clean and sanitise the tray.
4. Arrange a plate, bowl and necessary cutlery on the tray.
5. Place the food and beverages appropriately.
6. Include a napkin and any required accompaniments.
7. Check the food temperature.
8. Ensure the tray is stable and balanced.
9. Carry the tray carefully.
10. Place it on the designated table or bedside table.
11. Assist the consumer where necessary.
12. Clear the tray after the meal.
13. Clean and store the tray appropriately.

Examples of tray service

- Breakfast served to a patient in a hospital.
- Lunch delivered to an elderly person who is unable to walk.
- Food served to passengers on an aeroplane.
- Meals delivered to hotel guests in their rooms.

Advantages of tray service

1. Provides convenience to people who cannot access dining areas.
2. Makes individual meal portions easy to control.
3. Reduces unnecessary movement by consumers.
4. Is suitable for patients and older persons.
5. Allows meals to be delivered directly to consumers.
6. Makes it easier to provide special diets.
7. Is useful for room service in hotels.

Disadvantages of tray service

1. Requires additional staff to deliver meals.
2. Carrying several trays may be physically demanding.
3. Food may spill if trays are not properly balanced.
4. Food may cool during delivery.
5. Trays require regular cleaning and sanitising.
6. It may be time-consuming when serving many people individually.

E. SILVER SERVICE



Meaning

Silver service is a formal style of meal service in which trained waiters or servers serve food to guests individually from serving dishes or platters using appropriate serving utensils.

It is associated with formal restaurants, hotels, banquets and special occasions.

Characteristics of silver service

1. It is a formal style of meal service.
2. Food is presented in serving dishes.
3. Trained waiters serve individual guests.
4. Serving utensils are used appropriately.
5. Food is served in an organised sequence.
6. Guests are not expected to serve themselves.
7. High standards of etiquette and presentation are maintained.

How silver service is carried out

1. The dining table is properly set.
2. Guests are seated comfortably.

3. Food is prepared and arranged in serving dishes.
4. The server approaches guests appropriately.
5. The server holds the serving dish carefully.
6. Food is offered and served using suitable serving utensils according to the establishment's service procedure.
7. Appropriate portions are served to each guest.
8. Spills are avoided.
9. Subsequent courses are served in the correct order.
10. Used plates and cutlery are cleared appropriately.

Examples of meals served using silver service

- Roasted chicken.
- Beef dishes.
- Fish dishes.
- Vegetable dishes.
- Special occasion meals.

Advantages of silver service

1. Provides a high standard of hospitality.
2. Creates a formal dining experience.
3. Allows guests to receive individual attention.
4. Improves food presentation.
5. Promotes professional table etiquette.
6. Enables servers to control service portions.
7. Is suitable for formal occasions.

Disadvantages of silver service

1. Requires trained service personnel.
2. Takes more time than self-service methods.
3. Requires specialised serving equipment.
4. May be expensive to organise.
5. Requires adequate staff.
6. Is less practical for very large informal gatherings.

Situations where silver service is appropriate

- Formal dinners.
- State functions.
- Diplomatic events.

- High-end hotels.
- Banquets.
- Official ceremonies.
- Formal wedding receptions.

1.2.5 COMPARISON OF DIFFERENT STYLES OF MEAL SERVICE

Style	How food is served	Suitable occasions
Family service	Food is placed at the centre of the table for members to serve themselves	Family meals
Buffet service	Food is displayed on a serving table for guests to select	Weddings, conferences and hotels
Blue plate service	Complete individual portions are arranged on plates before serving	Restaurants and institutions
Tray service	Food is arranged on trays and delivered to individuals	Hospitals, hotels and homes
Silver service	Waiters serve guests individually from serving dishes	Formal dinners and banquets

1.2.6 FACTORS TO CONSIDER WHEN CHOOSING A MEAL SERVICE STYLE

The choice of meal service style depends on the circumstances surrounding the meal.

1. Nature of the occasion

The formality of an occasion determines the appropriate service style.

Examples:

- Family meals may use family service.
- Weddings may use buffet service.
- Formal banquets may use silver service.

2. Number of guests

The number of people being served influences the choice of method.

- Buffet service is suitable for large groups.
- Family service is suitable for small and medium-sized gatherings.
- Tray service is suitable for individual consumers.

3. Type of food

Different foods require different serving methods.

Examples:

- Soup requires suitable bowls and ladles.
- Rice and stew can be served using buffet or family service.
- A complete plated meal can use blue plate service.
- Formal meat dishes may be served using silver service.

4. Available equipment

The available serving equipment influences the choice of service style.

Examples:

- Serving dishes.
- Trays.
- Food warmers.
- Plates.
- Cutlery.
- Serving tongs.

5. Available space

The size and arrangement of the dining area determine the most practical service style.

A small dining room may be unsuitable for a large buffet arrangement.

6. Number of service personnel

The availability of waiters and other staff influences the choice.

Silver service requires trained servers, while buffet service requires fewer personnel for direct food distribution.

7. Cost of service

The cost of equipment, labour, food preparation and decoration should be considered.

8. Time available

Some service styles require more time than others.

Silver service requires careful individual attention, while blue plate service may allow faster distribution.

9. Nutritional and health requirements

Special dietary needs should be considered.

For example:

- Hospital patients may require tray service.
- Individuals with food allergies may need clearly identified dishes.
- Older persons may need assistance with serving.

10. Age and physical abilities of consumers

Children, older persons and people with physical disabilities may need assistance or convenient arrangements.

11. Cultural and religious beliefs

The service arrangement should respect consumers' cultural and religious practices.

12. Food hygiene and safety

The selected style should minimise contamination and maintain safe food temperatures.

13. Consumer preferences

The preferences of the people being served should be considered.

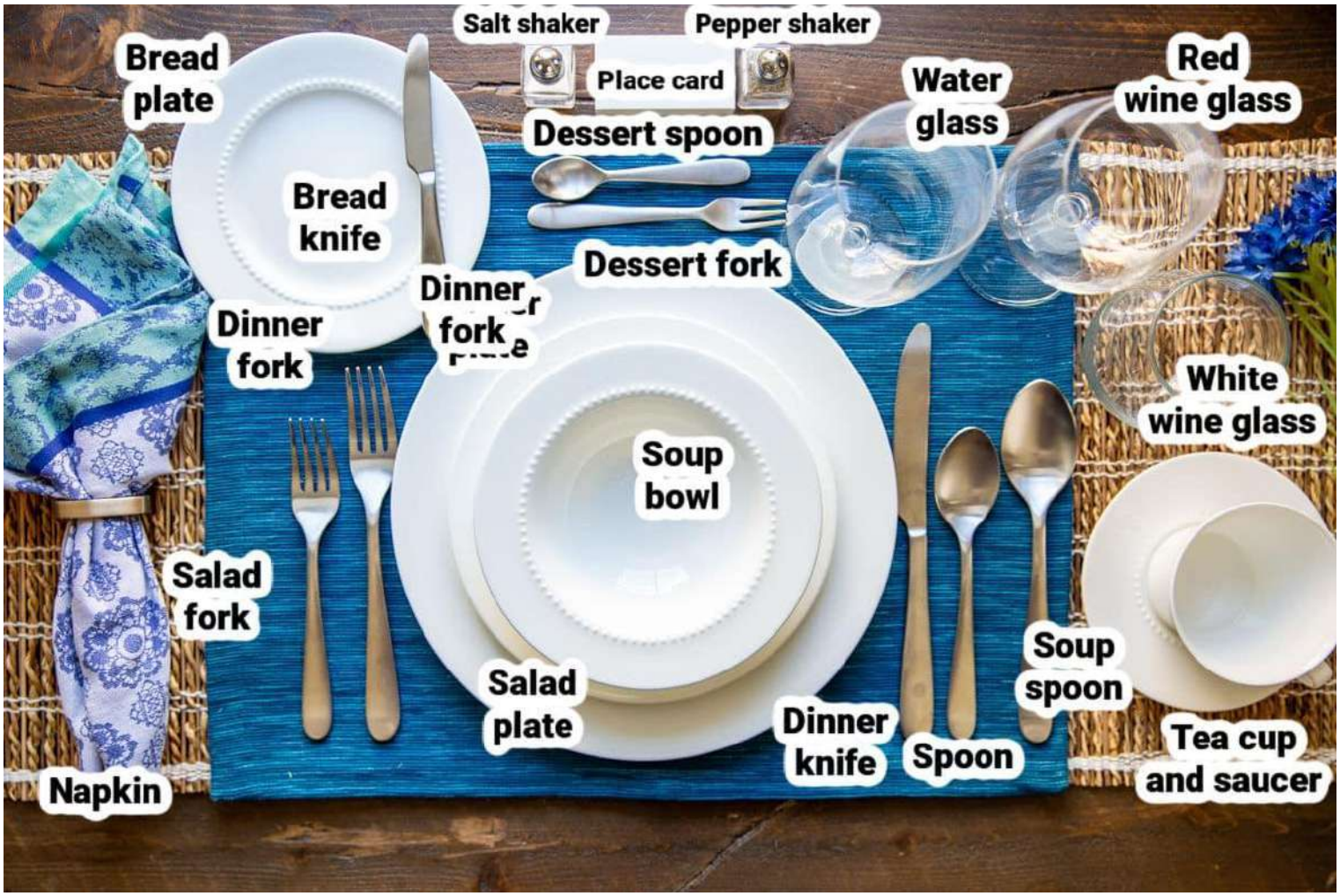
14. Type of establishment

Hotels, hospitals, schools, restaurants and homes may have different service requirements.

1.2.7 REQUIREMENTS FOR PROPER TABLE SETTING

Table setting refers to arranging the dining table with appropriate linen, crockery, cutlery, glassware and accessories before serving a meal.

A well-set table promotes comfort, convenience, hygiene and attractive food presentation.



A. Dining table

A dining table is a piece of furniture on which food is placed and meals are served.

Requirements of a good dining table

1. Should be stable and firm.
2. Should be clean and hygienic.
3. Should have enough space for the number of people being served.
4. Should have a suitable height.
5. Should have a smooth surface.
6. Should be arranged to allow comfortable movement around it.
7. Should be free from unnecessary objects.

B. Dining chairs

Dining chairs are seats provided for consumers during meals.

Requirements

- Should be strong and stable.
- Should be clean.
- Should be comfortable.
- Should have suitable height in relation to the table.
- Should allow consumers to sit upright.
- Should be arranged with adequate space between them.

C. Tablecloth

A tablecloth is a piece of fabric used to cover the dining table.

Functions

1. Protects the table surface from food spills and scratches.
2. Improves the appearance of the table.
3. Provides a clean surface for table setting.
4. Contributes to the colour scheme of the dining area.
5. Helps create a formal or informal dining atmosphere.

Qualities of a good tablecloth

- Clean.
- Well ironed.
- Free from stains.
- Appropriate in size.
- Suitable in colour.
- Made from an appropriate fabric.
- Properly arranged without excessive creases.

D. Table mats

Table mats are protective materials placed under plates, bowls or serving dishes.

Functions

1. Protect the table from heat.
2. Protect the table from scratches.
3. Prevent direct contact between crockery and the table surface.
4. Improve the appearance of the dining table.
5. Help keep individual dining spaces organised.

E. Napkins

Napkins are pieces of cloth or paper used during meals to wipe the mouth and fingers.



Functions

1. Protect clothing from food spills.
2. Wipe the mouth during meals.
3. Wipe fingers when necessary.
4. Improve the appearance of the table.
5. Promote cleanliness during eating.

Qualities of good napkins

- Clean.
- Soft.
- Absorbent.
- Free from unpleasant odours.
- Properly folded.
- Suitable in size.
- Made from safe materials.

Ways of folding napkins

- Triangle fold.
- Rectangle fold.
- Pocket fold.
- Fan fold.

- Bishop's hat fold.
- Rose fold.
- Envelope fold.

F. Crockery

Crockery consists of dishes and vessels used for serving and eating food.



Examples of crockery

1. Dinner plates.
2. Side plates.
3. Soup bowls.
4. Dessert plates.
5. Cups.
6. Saucers.
7. Serving dishes.
8. Platters.

Qualities of good crockery

- Clean.
- Free from cracks and chips.
- Strong and durable.
- Attractive.
- Appropriate in size.
- Easy to clean.
- Safe for food contact.

G. Cutlery

Cutlery consists of utensils used for eating and serving food.



Examples and uses

Cutlery	Use
Dinner fork	Eating the main course
Dinner knife	Cutting and handling food
Tablespoon	Eating suitable dishes and serving
Teaspoon	Stirring tea and eating suitable desserts
Dessert spoon	Eating desserts
Serving spoon	Transferring food from serving dishes
Serving fork	Serving suitable food portions
Soup spoon	Eating soup

Qualities of good cutlery

- Clean.
- Strong.
- Durable.
- Free from rust.
- Comfortable to hold.
- Properly polished.
- Suitable for the meal.

H. Glassware

Glassware refers to drinking vessels made from glass.



Examples

- Water tumblers.
- Juice glasses.
- Goblets.
- Drinking glasses.
- Suitable beverage glasses.

Qualities of good glassware

1. Clear and clean.
2. Free from cracks.
3. Free from chips.
4. Appropriate in size.
5. Suitable for the beverage.
6. Easy to handle.

I. Centrepiece

A centrepiece is a decorative item placed at the centre of a dining table.



Examples

- Fresh flowers.
- Decorative plants.
- Small fruit arrangements.

- Suitable decorative baskets.
- Low floral arrangements.

Qualities of a good centrepiece

1. Should be attractive.
2. Should be clean.
3. Should be suitable for the occasion.
4. Should not obstruct communication between diners.
5. Should not occupy excessive table space.
6. Should not have an overpowering fragrance.
7. Should be stable and safe.

J. Condiments

Condiments are flavour-enhancing substances placed on or near the dining table for use during meals.

Examples:

- Salt.
- Pepper.
- Tomato sauce.
- Chilli sauce.
- Vinegar.

Requirements

- Should be clean.
- Should be properly covered where necessary.
- Should be placed in suitable containers.
- Should be easily accessible.
- Should be used with appropriate serving spoons where necessary.

K. Serving equipment

Serving equipment is used to transfer food from serving containers to plates or other dishes.

Examples:

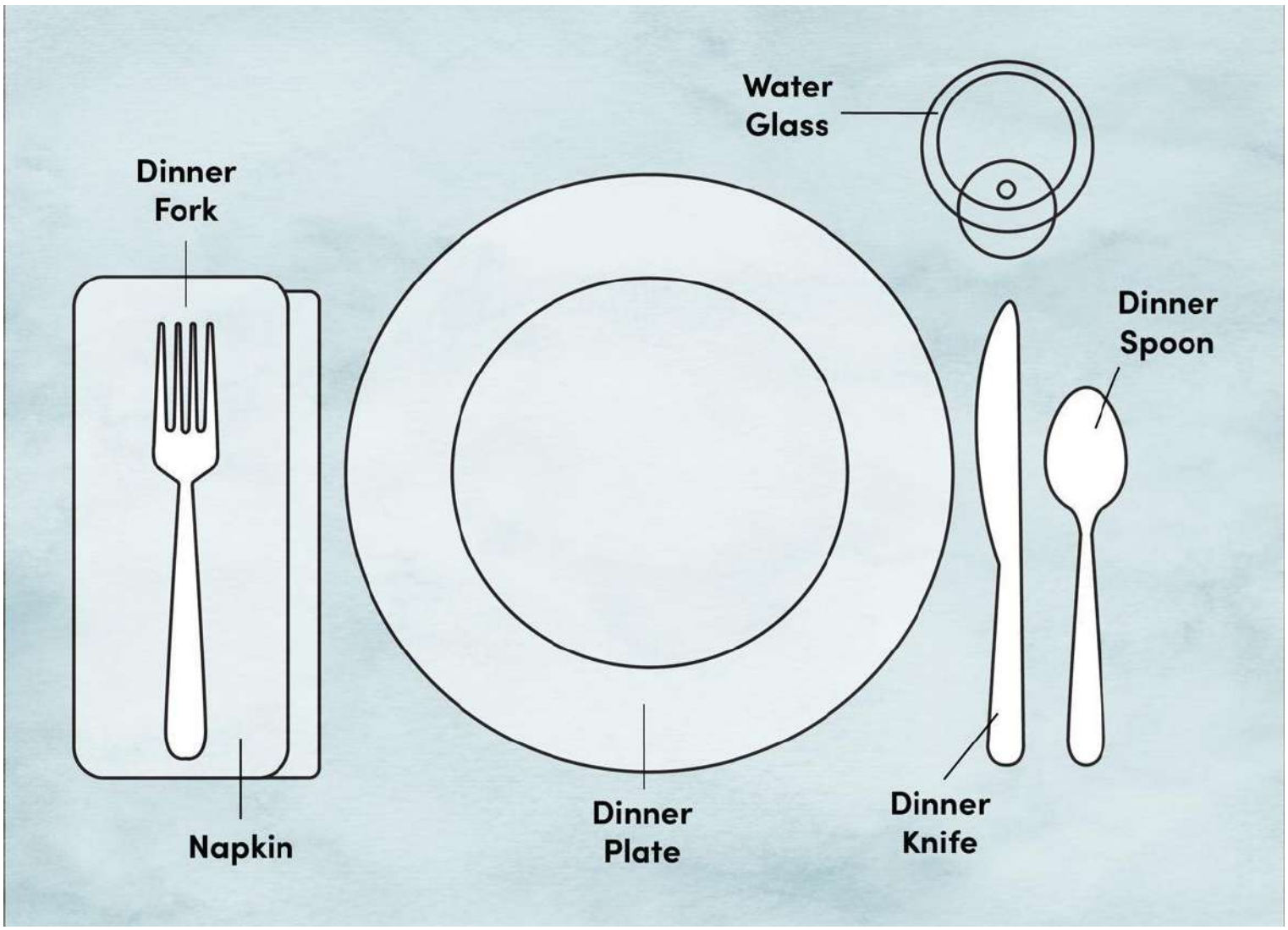
- Serving trays.
- Ladles.
- Food tongs.
- Serving spoons.
- Serving forks.
- Food warmers.

- Chafing dishes.

1.2.8 TABLE SETTING AND PLACEMENT OF TABLEWARE

Table setting involves arranging all the necessary items in their correct positions to ensure comfortable and organised meal service.

The arrangement depends on the type of meal and level of formality.



General principles of table setting

1. Clean the dining table before setting it.
2. Ensure the chairs are properly arranged.
3. Spread the tablecloth evenly.
4. Place individual table mats where required.
5. Place the dinner plate at the centre of each setting.
6. Place the fork on the left side of the plate.
7. Place the knife on the right side, with its cutting edge facing the plate.
8. Place the spoon on the right side of the knife.
9. Place the drinking glass above and to the right of the plate.
10. Place the napkin neatly on the plate or beside the fork.

11. Arrange additional cutlery according to the courses to be served.
12. Place condiments within convenient reach.
13. Arrange an appropriate centrepiece.
14. Check that the arrangement is balanced and attractive.
15. Ensure all items are clean and safe for use.

Correct placement of common table items

Item	Position
Dinner plate	Centre of the place setting
Fork	Left of the plate
Dinner knife	Right of the plate, cutting edge facing inward
Spoon	Right of the knife
Water glass	Above and to the right of the plate
Napkin	On the plate or to the left of the fork
Side plate	Above and to the left of the main plate
Condiments	Convenient shared position
Centrepiece	Centre of the dining table

Types of table setting

1. Informal table setting

An informal table setting is a simple arrangement used for ordinary family meals and casual gatherings.

It may include:

- Dinner plate.
- Fork.
- Knife.
- Spoon.
- Drinking glass.
- Napkin.
- Table mat.

2. Formal table setting

A formal table setting is a more elaborate arrangement used during official dinners, banquets and special occasions.

It may include:

- Dinner plate.
- Side plate.
- Soup bowl.
- Multiple forks.

- Multiple knives.
- Soup spoon.
- Dessert cutlery.
- Several glasses.
- Napkin.
- Centrepiece.

Differences between formal and informal table setting

Informal setting	Formal setting
Simple arrangement	Elaborate arrangement
Few utensils	More specialised utensils
Used for ordinary meals	Used for formal occasions
Less strict arrangement	Follows a more structured arrangement
Usually requires little preparation	Requires careful planning

1.2.9 GARNISHING AND DECORATING MEALS



Meaning of garnishing

Garnishing is the process of decorating prepared food using suitable ingredients to improve its appearance and make it more attractive.

Garnishes may also contribute flavour, aroma and nutritional value when edible ingredients are used.

Importance of garnishing

1. Improves food appearance.
2. Makes meals attractive.
3. Stimulates appetite.
4. Adds colour to food.
5. May improve flavour.
6. Can contribute additional nutrients.
7. Demonstrates creativity and skill.
8. Enhances the presentation of meals.
9. Helps distinguish different dishes.
10. Creates a professional impression in catering establishments.

Common ingredients used for garnishing

Ingredient	Possible use
Coriander leaves	Decorating stews and rice dishes
Tomato slices	Decorating salads and main dishes
Lemon wedges	Accompanying fish dishes
Carrot strips	Decorating vegetable dishes
Cucumber slices	Decorating salads
Parsley	Decorating soups and main dishes
Spring onions	Decorating rice and vegetable dishes
Orange slices	Decorating fruit platters
Fresh mint	Decorating fruit salads
Grated carrots	Decorating salads

Principles of good garnishing

1. Use fresh and clean ingredients.
2. Use edible garnishes whenever possible.
3. Ensure garnishes complement the food.
4. Avoid excessive decoration.
5. Use suitable colours.
6. Avoid overcrowding the plate.
7. Maintain balance and proportion.
8. Arrange garnishes neatly.
9. Use safe food-handling practices.

10. Avoid decorations that interfere with eating.

Examples of garnishing Kenyan dishes

- Ugali and beef stew may be accompanied by fresh coriander and vegetable garnishes.
- Rice may be decorated with chopped spring onions and carrots.
- Fish may be served with lemon wedges.
- Fruit salad may be decorated with mint leaves.
- Vegetable dishes may be presented with tomato and cucumber slices.

1.2.10 TABLE ETIQUETTE DURING MEAL SERVICE

Meaning

Table etiquette refers to the accepted rules of behaviour observed by individuals when eating and interacting with others at a dining table.

It promotes respect, cleanliness, comfort and good manners during meals.



Rules of good table etiquette

Before the meal

1. Wash hands before sitting down to eat.
2. Arrive at the dining table on time.
3. Sit properly and avoid pushing or disturbing others.
4. Wait for the host's invitation where appropriate.
5. Place the napkin neatly on the lap.
6. Avoid placing unnecessary objects on the dining table.

7. Switch mobile devices to silent mode where appropriate.

During the meal

1. Sit upright.
2. Avoid talking with food in the mouth.
3. Chew food quietly with the mouth closed.
4. Use cutlery appropriately.
5. Avoid reaching across another person's plate.
6. Request food to be passed politely.
7. Take reasonable food portions.
8. Avoid making unnecessary noise while eating.
9. Avoid playing with food.
10. Do not criticise food in an offensive manner.
11. Avoid talking loudly.
12. Use a napkin when necessary.
13. Avoid using personal cutlery to serve shared food.
14. Respect the food preferences and dietary requirements of others.
15. Avoid wasting food.

After the meal

1. Place used cutlery neatly on the plate according to the dining arrangement.
2. Fold or place the napkin neatly as appropriate.
3. Thank the host or person who prepared the meal.
4. Avoid leaving the dining area untidy.
5. Assist in clearing the table where appropriate.
6. Wash hands if necessary.

Importance of observing table etiquette

1. Promotes respect among diners.
2. Creates a pleasant dining environment.
3. Prevents unnecessary disturbances.
4. Promotes hygiene and cleanliness.
5. Demonstrates good upbringing.
6. Encourages social interaction.
7. Improves confidence during formal dining.
8. Promotes professional behaviour in hospitality settings.

1.2.11 FACTORS THAT ENHANCE FOOD PRESENTATION

Food presentation is the manner in which food is arranged and displayed before it is served to consumers.

The following factors improve food presentation:

1. Colour

Different natural food colours make meals attractive.

Example: Combining orange carrots, green vegetables, white rice and brown beans.

2. Texture

Combining foods with different textures creates visual and eating interest.

Examples:

- Soft mashed potatoes.
- Crisp vegetables.
- Tender meat.
- Smooth fruit yoghurt.

3. Shape

Food can be cut into suitable shapes to improve appearance.

Examples:

- Sliced carrots.
- Cubed potatoes.
- Round fruit slices.
- Neatly cut sandwiches.

4. Arrangement

Food should be arranged neatly without overcrowding the serving plate.

5. Portion size

Food portions should be suitable for the consumer and arranged proportionately.

6. Garnishing

Appropriate garnishes improve colour and appearance.

7. Cleanliness of serving dishes

Plates and serving containers should be clean and free from food stains.

8. Appropriate crockery

The size, shape and colour of plates should complement the food.

9. Temperature

Hot dishes should be served hot and cold dishes should be maintained at safe chilled temperatures where necessary.

10. Lighting and dining environment

Adequate lighting allows consumers to appreciate the appearance of food.

11. Aroma

Pleasant natural food aromas can stimulate appetite.

12. Creativity

Creative but practical arrangements improve the overall dining experience.

1.2.12 HYGIENE AND SAFETY DURING MEAL SERVICE

Food hygiene and safety are essential during meal service to protect consumers from contamination and foodborne illnesses.

Personal hygiene

- Wash hands thoroughly with soap and safe water.
- Wear clean clothing.
- Keep fingernails short and clean.
- Cover hair appropriately.
- Avoid handling ready-to-eat foods unnecessarily.
- Cover cuts and wounds with waterproof dressings.
- Avoid coughing or sneezing over food.
- Avoid serving food when suffering from illnesses that may contaminate it.

Equipment hygiene

- Clean and sanitise serving equipment.
- Use clean plates and cutlery.
- Wash serving trays after use.
- Keep food containers covered.
- Use clean serving spoons and tongs.
- Replace contaminated utensils.

Food safety

1. Keep raw and cooked foods separate.
2. Serve food at safe temperatures.
3. Avoid leaving perishable foods at room temperature for prolonged periods.
4. Use clean drinking water.
5. Keep insects and pests away from food.
6. Store leftovers safely and promptly.
7. Reheat leftovers thoroughly.
8. Avoid using cracked or chipped food-contact crockery.
9. Check food quality before serving.

10. Identify and communicate potential allergens.

Safety precautions during service

- Carry hot dishes carefully.
- Use suitable protective cloths when handling hot equipment.
- Avoid overloading trays.
- Keep walkways free from obstructions.
- Clean spills immediately.
- Use stable serving tables.
- Handle glassware carefully.
- Keep electrical equipment away from water.
- Keep hot liquids away from children.
- Avoid rushing when carrying food.

1.2.13 PROCEDURE FOR SETTING A DINING TABLE

Practical activity: Setting an informal dining table for a family of four



Requirements

- Dining table.
- Four chairs.

- Tablecloth.
- Four table mats.
- Four dinner plates.
- Four forks.
- Four knives.
- Four spoons.
- Four drinking glasses.
- Four napkins.
- Centrepiece.
- Condiment containers.

Procedure

1. Clean the dining table thoroughly.
2. Arrange four chairs around the table.
3. Spread the tablecloth evenly.
4. Place table mats at each seating position.
5. Place one dinner plate at the centre of each mat.
6. Place a fork on the left of each plate.
7. Place a knife on the right, with the cutting edge facing the plate.
8. Place a spoon to the right of the knife.
9. Position the drinking glass above and to the right of the plate.
10. Fold and arrange the napkins neatly.
11. Place suitable condiments in convenient positions.
12. Place an appropriate centrepiece at the centre of the table.
13. Check that all utensils are clean.
14. Ensure the chairs are properly arranged.
15. Inspect the table for neatness, balance and attractiveness.

Expected learning outcomes

At the end of the practical activity, learners should be able to:

- Identify requirements for table setting.
- Demonstrate correct placement of tableware.
- Arrange a dining table attractively.
- Observe hygiene and safety.
- Demonstrate creativity.

- Work cooperatively with others.

1.2.14 PRACTICAL ACTIVITY: DEMONSTRATING DIFFERENT STYLES OF MEAL SERVICE

Activity: Learners organise a mock restaurant and demonstrate the five styles of meal service.

Materials required

- Dining tables.
- Chairs.
- Serving dishes.
- Plates.
- Cutlery.
- Glassware.
- Napkins.
- Serving trays.
- Food warmers where available.
- Prepared foods.
- Condiments.
- Table linen.

Procedure

1. Divide learners into groups.
2. Assign each group a particular meal service style.
3. Research the assigned style using books and digital resources.
4. Identify the equipment required.
5. Plan a suitable menu.
6. Prepare the dining area.
7. Set the table appropriately.
8. Arrange food for service.
9. Demonstrate the assigned style.
10. Observe hygiene and safety.
11. Demonstrate appropriate table etiquette.
12. Allow other learners to evaluate the service.
13. Discuss strengths and weaknesses.
14. Suggest improvements.

Suggested assessment rubric

Assessment area	Marks
Identification of service equipment	4
Correct table setting	4
Correct demonstration of service style	5
Food presentation and garnishing	3
Hygiene and safety	2
Table etiquette and communication	2
Total	20

1.2.15 COMMON CHALLENGES IN MEAL SERVICE AND THEIR SOLUTIONS

Challenge	Possible solution
Insufficient serving equipment	Plan equipment requirements in advance
Food becoming cold	Use suitable food warmers and serve promptly
Food contamination	Observe proper food hygiene
Limited dining space	Select a suitable service style and arrange space efficiently
Shortage of serving staff	Allocate duties and organise service
Food wastage	Provide reasonable portions and replenish food appropriately
Spillage during service	Use stable trays and appropriate serving utensils
Long buffet queues	Organise serving stations and arrange food logically
Poor food presentation	Improve arrangement, colour and garnishing
Broken crockery	Inspect and replace damaged items
Different dietary needs	Label dishes and provide suitable alternatives
Poor table etiquette	Educate and guide consumers on dining manners

1.2.16 CARE AND MAINTENANCE OF MEAL SERVICE EQUIPMENT

Proper care and maintenance of meal service equipment improves durability, hygiene and safety.

Care of crockery

- Wash immediately after use.
- Use appropriate cleaning agents.
- Rinse thoroughly.
- Dry using clean materials or air-dry appropriately.
- Store carefully.
- Avoid stacking unstable piles.
- Inspect for cracks and chips.

Care of cutlery

- Wash thoroughly after use.
- Remove food particles.

- Dry properly.
- Polish where necessary.
- Store in clean, dry containers.
- Avoid using damaged or rusty utensils.

Care of glassware

- Wash using appropriate cleaning materials.
- Rinse thoroughly.
- Dry without leaving stains.
- Handle carefully.
- Store in a stable position.
- Inspect for cracks and chips.

Care of table linen

- Wash regularly.
- Remove stains promptly.
- Dry thoroughly.
- Iron where appropriate.
- Store in a clean, dry place.
- Replace worn-out linen.

Care of serving trays

- Clean and sanitise after use.
- Dry properly.
- Avoid overloading.
- Store in a dry place.
- Inspect for damage.

REVISION EXERCISES

SUB-STRAND 1.2: MEAL SERVICE

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Instructions: Answer all questions by selecting the correct answer from the alternatives A, B, C and D. Each question carries 1 mark.

1. What is meant by meal service?

A. Purchasing food from the market.
B. Presenting and serving prepared food to consumers.
C. Storing food in a refrigerator.
D. Preparing a shopping list.

2. Which of the following is the main purpose of proper meal service?

A. Increasing food wastage.
B. Reducing food variety.
C. Enhancing food presentation and consumer satisfaction.
D. Increasing the cost of meals.

3. A meal service style in which food is placed at the centre of the dining table for people to serve themselves is known as:

A. Silver service.
B. Family service.
C. Tray service.
D. Blue plate service.

4. Which meal service style is most appropriate for a large wedding reception where guests select their own food?

A. Tray service.
B. Silver service.
C. Buffet service.
D. Blue plate service.

5. In which meal service style is a complete meal arranged on individual plates before being served?

A. Family service.
B. Blue plate service.
C. Buffet service.
D. Silver service.

6. A patient receiving food arranged on a tray at the bedside is an example of:

A. Buffet service.
B. Family service.
C. Tray service.
D. Silver service.

7. Which meal service style requires trained waiters to serve guests individually from serving dishes?

A. Silver service.
B. Family service.
C. Buffet service.
D. Tray service.

8. Which of the following is an advantage of buffet service?

A. Guests cannot choose their food.
B. It allows guests to select from a variety of foods.
C. It requires every guest to be served individually.
D. It is only suitable for two people.

9. Which of the following is a disadvantage of family service?

A. It encourages family interaction.
B. It requires fewer serving personnel.
C. Food may become cold when left on the table.
D. It allows people to choose their portions.

10. Which factor should be considered when selecting a meal service style?

A. Number of guests.
B. Colour of the building only.
C. Age of the furniture only.
D. Number of windows in the kitchen only.

11. What is the main function of a tablecloth?

A. To serve food.
B. To protect the table surface and improve its appearance.
C. To cut food.
D. To hold cooking ingredients.

12. Which of the following is an example of crockery?

A. Dinner plate.
B. Tablecloth.
C. Serving tray.
D. Table mat.

13. Which of the following is an example of cutlery?

A. Water glass.
B. Dinner fork.
C. Tablecloth.
D. Flower vase.

14. Where should a dinner fork be placed during an ordinary table setting?

A. To the left of the plate.
B. To the right of the plate.
C. Above the glass.
D. Under the plate.

15. The cutting edge of a dinner knife should face:

A. Away from the plate.
B. Towards the plate.
C. Towards the table edge.
D. Towards the glass.

16. Which of the following is an example of glassware?

A. Dinner plate.
B. Soup bowl.
C. Water tumbler.
D. Dinner fork.

17. What is the purpose of a centrepiece?

A. To provide cooking fuel.
B. To decorate the dining table.
C. To replace the dinner plate.
D. To hold used cutlery.

18. Which of the following is a suitable characteristic of a good centrepiece?

A. It should obstruct communication.
B. It should occupy the entire table.
C. It should be attractive and appropriately sized.
D. It should have a strong unpleasant smell.

19. A piece of cloth or paper used to wipe the mouth during meals is known as:

A. Table mat.
B. Napkin.
C. Table runner.
D. Tablecloth.

20. Which of the following is an example of a food garnish?

A. Coriander leaves.
B. Cooking charcoal.
C. Washing detergent.
D. Dishwashing sponge.

21. What is the main purpose of garnishing food?

A. To increase food contamination.
B. To improve the appearance and appeal of food.
C. To reduce food nutrients.
D. To make food difficult to serve.

22. Which of the following is an important rule of table etiquette?

A. Talking with food in the mouth.
B. Making unnecessary noise while eating.
C. Chewing food with the mouth closed.
D. Reaching across other people's plates.

23. Which practice should be observed before serving food?

A. Handling food with dirty hands.
B. Washing hands with soap and safe water.
C. Leaving serving equipment unwashed.
D. Placing cooked food on dirty surfaces.

24. What is cross-contamination?

A. The transfer of harmful microorganisms from one food or surface to another.
B. The process of cooking food thoroughly.
C. The process of decorating food.
D. The arrangement of cutlery on a table.

25. Which equipment is most appropriate for serving soup?

A. Tongs.
B. Ladle.
C. Dinner fork.
D. Serving tray only.

26. Which of the following is an advantage of blue plate service?

A. It encourages uncontrolled food portions.
B. It allows food portions to be controlled.
C. It requires all guests to serve themselves.
D. It eliminates the need for plates.

27. Which of the following is an important consideration when arranging a buffet table?

A. Food should be left uncovered.
B. Food should be displayed without serving utensils.
C. Hot and cold foods should be maintained at safe temperatures.
D. Guests should use their hands to serve food.

28. Which of the following is an appropriate way of carrying a serving tray?

A. Overloading the tray.
B. Carrying it while unbalanced.
C. Arranging items securely and distributing their weight evenly.
D. Carrying it with dirty hands.

29. Which of the following is a way of maintaining glassware?

A. Storing cracked glasses for future use.
B. Washing and drying glasses properly.
C. Stacking glasses carelessly.
D. Using abrasive materials that damage glass.

30. Which of the following best demonstrates good hospitality during meal service?

A. Ignoring guests' needs.
B. Serving food carelessly.
C. Treating guests respectfully and providing appropriate service.
D. Allowing food to become contaminated.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Instructions: Answer all questions. Provide clear explanations and relevant examples where necessary.

QUESTION 1: INTRODUCTION TO MEAL SERVICE (8 MARKS)

a) Define the term meal service. (2 marks)

b) State four importance of proper meal service in a family or catering establishment. (4 marks)

c) Identify two examples of establishments where meal service is practised. (2 marks)

QUESTION 2: STYLES OF MEAL SERVICE (10 MARKS)

a) Describe the following styles of meal service:

i. Family service. (2 marks)

ii. Buffet service. (2 marks)

iii. Silver service. (2 marks)

b) State four factors to consider when selecting a suitable style of meal service. (4 marks)

QUESTION 3: TABLE SETTING (8 MARKS)

a) Explain four requirements for setting a dining table. (4 marks)

b) Describe the correct placement of the following items during an ordinary table setting:

i. Dinner fork. (1 mark)

ii. Dinner knife. (1 mark)

iii. Drinking glass. (1 mark)

iv. Napkin. (1 mark)

QUESTION 4: FOOD PRESENTATION AND GARNISHING (8 MARKS)

a) Define garnishing. (2 marks)

b) Explain three principles of good food garnishing. (3 marks)

c) State three ways through which attractive food presentation enhances meal service. (3 marks)

QUESTION 5: TABLE ETIQUETTE, HYGIENE AND SAFETY (8 MARKS)

a) State four rules of good table etiquette that should be observed during meal service. (4 marks)

b) Explain four hygiene and safety practices that should be observed when serving meals. (4 marks)

QUESTION 6: PRACTICAL APPLICATION OF MEAL SERVICE (8 MARKS)

A hotel in Kilgoris is organising a graduation celebration for 100 guests. The management intends to provide rice, chapati, beef stew, chicken, vegetables, fruits and beverages.

a) Recommend the most suitable style of meal service for the occasion and give a reason for your choice. (2 marks)

b) Explain three factors the hotel should consider when organising the meal service. (3 marks)

c) State three pieces of equipment required for the meal service. (3 marks)

MARKING SCHEME

SUB-STRAND 1.2: MEAL SERVICE

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	C
3	B
4	C
5	B
6	C
7	A
8	B
9	C
10	A
11	B
12	A
13	B
14	A
15	B
16	C
17	B
18	C
19	B
20	A
21	B
22	C
23	B
24	A
25	B
26	B
27	C
28	C

29	B
30	C

Total: 30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: INTRODUCTION TO MEAL SERVICE (8 MARKS)

a) Define the term meal service. (2 marks)

- Meal service is the process of presenting and distributing prepared food and beverages to individuals or groups for consumption in an organised and appropriate manner. (2 marks)

b) Importance of proper meal service in a family or catering establishment (4 marks)

Award 1 mark for each correctly stated and explained point. Any four.

1. Improves food presentation: Makes food attractive and appealing to consumers.
2. Promotes customer satisfaction: Ensures that consumers receive meals in a pleasant and organised manner.
3. Promotes hygiene: Ensures that food is handled and served safely, reducing contamination.
4. Encourages good eating habits: Creates a pleasant dining environment and encourages people to enjoy their meals.
5. Promotes hospitality: Makes guests feel welcomed, respected and appreciated.
6. Ensures efficient service: Helps food to be distributed systematically and within the appropriate time.
7. Controls food portions: Helps ensure that food is shared fairly and appropriately.
8. Reduces food wastage: Encourages proper portioning and handling of food.
9. Enhances the reputation of an establishment: Good meal service creates a positive impression among customers.

c) Examples of establishments where meal service is practised (2 marks)

Award 1 mark for each correct example. Any two.

1. Hotels.
2. Restaurants.
3. Hospitals.
4. Schools.
5. Catering establishments.
6. Hospitals and nursing homes.
7. Airlines.
8. Private homes.
9. Boarding institutions.

QUESTION 2: STYLES OF MEAL SERVICE (10 MARKS)

a) Description of styles of meal service

i. Family service (2 marks)

- Food is prepared and placed in serving dishes at the centre of the dining table. (1 mark)
- Family members serve themselves or pass the dishes around the table according to their needs. (1 mark)

ii. Buffet service (2 marks)

- Different dishes are arranged on a long table or designated serving area. (1 mark)
- Guests move along the serving area and select the foods and quantities they prefer. (1 mark)

iii. Silver service (2 marks)

- Food is presented in serving dishes and served to guests individually by trained waiters. (1 mark)
- The waiter uses appropriate serving utensils, such as a serving spoon and fork, to transfer food onto the guests' plates. (1 mark)

b) Factors to consider when selecting a suitable style of meal service (4 marks)

Award 1 mark for each correctly stated factor. Any four.

1. Number of guests: Large gatherings may require buffet service, while small gatherings may use family service.
2. Type of occasion: Formal occasions may require silver service, while informal celebrations may use buffet service.
3. Available budget: The service style should be affordable and should not exceed the available resources.
4. Available space: The dining area should have enough space for the selected service arrangement.
5. Available equipment: The establishment should have appropriate serving dishes, plates, cutlery and other equipment.
6. Number of serving personnel: The available staff should be sufficient to provide the selected style of service.
7. Type of food: Some foods are easier to serve using particular styles.
8. Time available: The service style should allow meals to be served within the available time.
9. Age and needs of guests: Children, older persons and persons with disabilities may require special arrangements.
10. Nature of the establishment: Hotels, hospitals, schools and private homes may require different service styles.

QUESTION 3: TABLE SETTING (8 MARKS)

a) Requirements for setting a dining table (4 marks)

Award 1 mark for each correctly explained requirement. Any four.

1. Tablecloth: A clean and appropriately sized tablecloth should be used to cover and protect the table surface.

2. Crockery: Clean plates, bowls and other appropriate dishes should be provided for serving and eating food.

3. Cutlery: Appropriate knives, forks and spoons should be arranged according to the menu.

4. Glassware: Clean drinking glasses or tumblers should be provided for serving beverages.

5. Napkins: Clean cloth or paper napkins should be provided for wiping the mouth and hands.

6. Centrepiece: An attractive and appropriately sized decorative item may be placed at the centre of the table.

7. Table mats: These may be provided to protect the table surface from heat, spills and scratches.

8. Clean dining table: The table should be clean, stable and appropriately arranged before placing the items.

b) Correct placement of items during an ordinary table setting (4 marks)

i. Dinner fork (1 mark)

- Placed on the left-hand side of the dinner plate.

ii. Dinner knife (1 mark)

- Placed on the right-hand side of the dinner plate, with its cutting edge facing towards the plate.

iii. Drinking glass (1 mark)

- Placed above the knife, usually towards the upper right-hand side of the dinner plate.

iv. Napkin (1 mark)

- Placed on the dinner plate or to the left of the fork, or arranged neatly in an appropriate position on the table.

QUESTION 4: FOOD PRESENTATION AND GARNISHING (8 MARKS)

a) Define garnishing. (2 marks)

- Garnishing is the process of decorating or enhancing the appearance of prepared food using suitable edible items before serving. (2 marks)

b) Principles of good food garnishing (3 marks)

Award 1 mark for each correctly explained principle. Any three.

1. Simplicity: Garnishing should be simple and should not overcrowd the food.
2. Colour contrast: Garnishes should provide attractive colour combinations that improve the appearance of the dish.
3. Edibility: Garnishes should preferably be edible and safe for human consumption.
4. Suitability: The garnish should complement the flavour and nature of the food being served.
5. Proportion: The quantity of garnish should be appropriate to the size of the dish.
6. Freshness: Fresh ingredients should be used to make the food attractive.
7. Cleanliness: Garnishes should be prepared and handled hygienically.

c) Ways attractive food presentation enhances meal service (3 marks)

Award 1 mark for each correctly stated and explained point. Any three.

1. Stimulates appetite: Attractive food presentation encourages people to develop interest in eating.
2. Improves customer satisfaction: Well-presented meals create a positive dining experience.
3. Creates a good impression: Attractive presentation reflects the quality and professionalism of the establishment.
4. Promotes enjoyment: Attractive colours, arrangement and garnishing make meals more enjoyable.

5. Enhances the perceived value of food: Well-presented meals may appear more appealing and professionally prepared.
6. Encourages food consumption: Attractive presentation may encourage people, especially children, to eat a wider variety of foods.

QUESTION 5: TABLE ETIQUETTE, HYGIENE AND SAFETY (8 MARKS)

a) Rules of good table etiquette during meal service (4 marks)

Award 1 mark for each correct response. Any four.

1. Chew food with the mouth closed.
2. Avoid talking while the mouth is full of food.
3. Sit upright and maintain a proper sitting posture.
4. Use the appropriate cutlery when eating.
5. Avoid making unnecessary noises while eating.
6. Do not reach across another person's plate; politely request items to be passed.
7. Avoid playing with food or utensils.
8. Wait until everyone has been served before beginning to eat, where appropriate.
9. Use a napkin to wipe the mouth when necessary.
10. Avoid criticising food or making unpleasant comments at the dining table.
11. Thank the host or person who prepared the meal.
12. Avoid using mobile phones unnecessarily during formal meals.

b) Hygiene and safety practices when serving meals (4 marks)

Award 1 mark for each correctly explained practice. Any four.

1. Washing hands: Wash hands thoroughly with soap and clean running water before handling or serving food.

2. Using clean serving equipment: Ensure that serving spoons, ladles, trays and other utensils are properly cleaned before use.

3. Covering food: Keep food covered to protect it from flies, dust and other contaminants.

4. Avoiding direct hand contact: Use appropriate serving utensils instead of touching ready-to-eat food with bare hands.

5. Maintaining safe food temperatures: Keep hot foods hot and cold foods cold to prevent the growth of harmful microorganisms.

6. Separating raw and cooked foods: Prevent cross-contamination by keeping raw foods away from cooked and ready-to-eat foods.

7. Using clean serving surfaces: Ensure that tables, counters and trays are clean before placing food on them.

8. Handling hot equipment carefully: Use dry oven gloves or appropriate protective equipment when handling hot serving dishes.

9. Checking food quality: Do not serve food that is spoiled, contaminated or has an unusual smell.

10. Proper personal hygiene: Wear clean clothing and cover cuts or wounds when handling food.

QUESTION 6: PRACTICAL APPLICATION OF MEAL SERVICE (8 MARKS)

a) Most suitable style of meal service and reason (2 marks)

Recommended: Buffet service

- Buffet service. (1 mark)
- It is suitable because it allows the 100 guests to select their preferred foods and quantities from a variety of dishes arranged on a serving table. (1 mark)

Accept other suitable service styles if correctly justified in the context of the occasion.

b) Factors the hotel should consider when organising the meal service (3 marks)

Award 1 mark for each correctly explained factor. Any three.

1. Number of guests: The hotel should provide sufficient food, seating space and serving facilities for all 100 guests.

2. Available space: The venue should have enough space for dining tables, buffet tables and movement of guests.

3. Food quantities: Adequate quantities of rice, chapati, beef stew, chicken, vegetables, fruits and beverages should be prepared.

4. Budget: The hotel should organise the service within the available financial resources.

5. Available personnel: Sufficient trained staff should be available to prepare, arrange and serve food.

6. Food hygiene and safety: Food should be prepared, stored and displayed under hygienic conditions and at safe temperatures.

7. Dietary requirements: The hotel should consider guests with allergies, special dietary needs and food preferences.

8. Equipment availability: Appropriate serving dishes, plates, cutlery and other equipment should be available.

9. Time management: Food should be prepared and served at the appropriate time to avoid unnecessary delays.

10. Food arrangement: Dishes should be arranged systematically to allow guests to serve themselves conveniently.

c) Pieces of equipment required for the meal service (3 marks)

Award 1 mark for each correct example. Any three.

1. Serving trays.
2. Serving spoons.
3. Soup ladles.
4. Dinner plates.
5. Dinner forks.
6. Dinner knives.
7. Drinking glasses or tumblers.
8. Chafing dishes or food warmers.

9. Buffet tables.
10. Food covers.
11. Tongs.
12. Water jugs.
13. Serving bowls.
14. Napkins.
15. Food storage containers.

Maximum: 3 marks

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.3: FOOD PRESERVATION







1.3.1 INTRODUCTION TO FOOD PRESERVATION

Food is an essential basic human need. It provides nutrients required for growth, development, energy production, repair of body tissues and protection against diseases.

However, most foods are perishable. They can spoil when exposed to microorganisms, moisture, air, unsuitable temperatures, enzymes and other environmental conditions.

Food preservation is therefore necessary to maintain the quality, safety and usefulness of food for a longer period.

In Kenya, food preservation is important because food production is seasonal in many areas. During harvest seasons, farmers may produce large quantities of maize, beans, bananas, mangoes, tomatoes, potatoes and other agricultural products. Without proper preservation, some of these foods may spoil before they are consumed or sold.

Food preservation enables households, farmers, food processors, schools, hotels and other institutions to reduce food losses and maintain food supplies throughout the year.

Examples of food preservation practices in Kenya include:

- Drying maize and beans after harvesting.
- Drying leafy vegetables such as kunde and managu.
- Smoking fish.
- Refrigerating milk and meat.
- Freezing meat and fish.
- Making fruit jams and juices.
- Pickling vegetables.
- Fermenting milk to make traditional fermented milk.
- Canning fruits and vegetables.

1.3.2 DEFINITION OF FOOD PRESERVATION

Food preservation is the process of treating, handling, processing and storing food using appropriate methods to prevent or delay spoilage and maintain its safety, quality and nutritional value for a longer period.

Food preservation works by controlling or reducing the activities of microorganisms, enzymes and other factors responsible for food deterioration.

Meaning of food spoilage

Food spoilage is the deterioration of food quality, making food unacceptable or unsuitable for consumption because of undesirable changes in its appearance, smell, taste, texture or safety.

Examples:

- Milk developing an unpleasant smell and taste due to microbial activity.
- Bread developing mould.
- Meat becoming slimy and developing an unpleasant odour.
- Fruits becoming excessively soft and rotten.
- Cooked food becoming sour after being left at room temperature for too long.

Important: Not all dangerous food is visibly spoiled. Some harmful microorganisms and toxins may be present without changing the appearance, smell or taste of food. Therefore, tasting food to determine whether it is safe is not recommended.

1.3.3 FOOD SPOILAGE

Food spoilage occurs when food undergoes undesirable physical, chemical, biological or biochemical changes that reduce its quality or make it unsafe for consumption.

A. Causes of food spoilage

1. Microorganisms

Microorganisms are tiny living organisms that may cause food deterioration and foodborne diseases.

The main microorganisms associated with food spoilage include:

- Bacteria.
- Yeasts.
- Moulds.

a) Bacteria

Bacteria are microscopic organisms that multiply rapidly under favourable conditions.

They can cause:

- Sourness in milk.
- Sliminess in meat.
- Undesirable changes in cooked foods.
- Foodborne illnesses.

Examples include bacteria associated with the spoilage of meat, milk and cooked foods.

b) Yeasts

Yeasts are microscopic fungi that can grow in foods containing sugars and moisture.

They may cause:

- Fermentation of fruit juices.
- Gas production.
- Unwanted alcoholic smells.
- Changes in food flavour.

c) Moulds

Moulds are fungi that grow on food surfaces, especially under favourable moisture and temperature conditions.

They may cause:

- Mould growth on bread.
- Spoilage of fruits.
- Deterioration of stored grains.

- Spoilage of nuts and other foods.

Some moulds produce harmful substances known as mycotoxins.

For example, certain moulds growing on poorly stored maize and groundnuts may produce aflatoxins, which are harmful to human health.







2. Enzyme activity

Enzymes are natural substances found in living organisms that speed up biochemical reactions.

Food contains natural enzymes that continue to act after harvesting or slaughtering.

Their activities may cause:

- Ripening of fruits.
- Softening of vegetables.
- Browning of cut apples and potatoes.
- Changes in flavour.
- Breakdown of fats and proteins.

For example, a cut avocado may turn brown when exposed to air because of enzymatic reactions.

3. Moisture

Moisture supports the growth of many microorganisms and promotes certain chemical reactions.

Foods with high moisture content generally spoil faster than properly dried foods.

Examples:

- Fresh tomatoes spoil faster than properly dried tomatoes.

- Fresh fish spoils faster than adequately dried fish.
- Fresh maize with excessive moisture is more likely to develop mould during storage.

4. Temperature

Temperature affects the rate at which microorganisms multiply and enzymes operate.

- Warm conditions encourage rapid multiplication of many microorganisms.
- Refrigeration slows down the growth of many microorganisms.
- Freezing stops the multiplication of most microorganisms while the food remains frozen, although many can survive.
- Excessive heat may destroy nutrients and affect food quality.

5. Oxygen (air)

Oxygen supports oxidation and the growth of some microorganisms.

Oxidation may cause:

- Rancidity in fats and oils.
- Discolouration of foods.
- Loss of certain vitamins.
- Changes in flavour.

6. Insects and pests

Insects and rodents damage food during storage.

Examples:

- Weevils attacking stored maize and beans.
- Rats contaminating stored cereals.
- Moths damaging stored grains.
- Insects feeding on dried foods.

7. Physical damage

Physical damage exposes food tissues to microorganisms and accelerates deterioration.

Examples:

- Bruising of mangoes.
- Cutting or crushing tomatoes.
- Breaking eggshells.
- Damaging the skin of potatoes.

8. Chemical contamination

Food may deteriorate or become unsafe when exposed to harmful chemicals.

Examples:

- Contamination by pesticides.

- Improper use of cleaning chemicals.
- Contact with unsuitable storage containers.
- Contamination by toxic substances.

B. Signs of food spoilage

Sign	Explanation	Example
Change in colour	Food develops an unusual colour	Browning or discolouration
Unpleasant smell	Food develops an abnormal odour	Spoiled meat
Change in texture	Food becomes slimy, excessively soft or sticky	Spoiled fish
Mould growth	Fungal growth appears on food	Mouldy bread
Gas production	Unwanted gas causes swelling or bubbling	Spoiled packaged food
Unusual taste	Food develops an abnormal flavour	Spoiled milk
Rotting	Food tissues break down	Rotten tomatoes

Note: These signs can indicate spoilage, but their absence does not guarantee food safety.

1.3.4 PRINCIPLES OF FOOD PRESERVATION

Meaning of principles of food preservation

These are the scientific ideas and practices applied to prevent or delay food spoilage and maintain food quality during storage.

Different preservation methods work by controlling one or more conditions necessary for microbial growth, enzyme activity and food deterioration.

Main principles

1. Destruction of microorganisms

This involves using heat or other suitable treatments to destroy microorganisms responsible for food spoilage and foodborne diseases.

Examples:

- Pasteurisation of milk.
- Sterilisation of canned foods.
- Cooking food thoroughly.
- Appropriate heat treatment of fruit juices.

2. Prevention or slowing down of microbial growth

This involves creating conditions that make it difficult for microorganisms to multiply.

Examples:

- Refrigeration.
- Freezing.
- Drying.
- Salting.

- Adding sugar in suitable concentrations.
- Pickling using vinegar.

3. Removal of moisture

Microorganisms require available water for growth and multiplication.

Drying removes moisture from food, thereby reducing the water available to microorganisms.

Examples:

- Drying maize.
- Drying beans.
- Drying fish.
- Drying vegetables.
- Making dried mangoes.

4. Reduction of temperature

Low temperatures slow down microbial multiplication and enzyme activity.

Examples:

- Refrigerating milk.
- Freezing meat.
- Refrigerating vegetables.

5. Exclusion of air

Some microorganisms require oxygen for growth. Excluding oxygen can therefore slow down their growth.

Examples:

- Vacuum packaging.
- Airtight packaging.
- Proper sealing of food containers.

However, oxygen-free conditions do not prevent all microbial hazards. Some dangerous microorganisms can grow without oxygen, so appropriate processing and temperature control are essential.

6. Use of acidity

Increasing the acidity of food can inhibit the growth of many harmful microorganisms.

Examples:

- Pickling onions in vinegar.
- Preserving cucumbers in an acidic solution.
- Preparing acidic fruit products.

7. Use of preservatives

Preservatives are substances added to food in permitted quantities to delay spoilage.

Examples include:

- Sodium benzoate in suitable acidic foods.
- Potassium sorbate in certain food products.
- Salt in cured foods.
- Sugar in jams.

Only approved preservatives should be used according to applicable food safety standards and instructions.

8. Prevention of contamination

Food should be protected from microorganisms, insects, rodents, dirt and harmful substances.

Examples:

- Washing hands before food handling.
- Using clean containers.
- Covering food.
- Cleaning storage facilities.
- Separating raw and cooked foods.

1.3.5 CLASSIFICATION OF FOOD PRESERVATION METHODS

Food preservation methods can be classified into two broad categories:

1. Traditional food preservation methods.
2. Modern food preservation methods.



A. TRADITIONAL FOOD PRESERVATION METHODS

Traditional food preservation methods are techniques developed and practised by communities over generations to extend the storage life of food using locally available resources and knowledge.

They are commonly practised in rural and urban Kenyan households.

Examples include:

- Sun drying.
- Smoking.
- Salting.
- Fermentation.
- Use of sugar.
- Traditional storage in dry containers.
- Drying over gentle heat.

1. Sun drying



Meaning

Sun drying is a traditional food preservation method in which food is exposed to sunlight and moving air to remove moisture.

The reduction in moisture makes it difficult for many microorganisms to grow and multiply.

Foods preserved through sun drying

- Maize.
- Beans.
- Sorghum.
- Millet.
- Cowpeas.
- Green grams.

- Fish.
- Mangoes.
- Bananas.
- Tomatoes.
- Leafy vegetables.
- Chillies.

Procedure for sun drying maize

1. Harvest mature maize cobs.
2. Remove damaged and diseased cobs.
3. Shell the maize.
4. Sort the grains to remove foreign materials.
5. Spread the grains in a thin layer on a clean drying surface.
6. Expose the grains to sunlight in a suitable, protected location.
7. Turn the grains regularly to promote uniform drying.
8. Protect the grains from rain, dust, animals and birds.
9. Check that the grains have reached a safe moisture level for storage.
10. Cool the grains before packaging.
11. Store in clean, dry, pest-proof containers or suitable grain bags.

Procedure for drying vegetables

1. Select fresh, healthy vegetables.
2. Remove damaged leaves.
3. Wash using safe water.
4. Drain excess water.
5. Cut into suitable small pieces where necessary.
6. Blanch certain vegetables briefly where appropriate to improve quality and enzyme control.
7. Spread thinly on clean drying trays.
8. Dry using sunlight or an appropriate solar dryer.
9. Turn the vegetables where necessary.
10. Ensure they are thoroughly dried.
11. Cool before packaging.
12. Store in clean, airtight, moisture-resistant containers.

Advantages of sun drying

1. It is relatively inexpensive.

2. It uses naturally available solar energy.
3. It reduces moisture content.
4. It reduces the weight of food.
5. It makes transportation easier.
6. It can be practised at household level.
7. It helps preserve seasonal produce.
8. It reduces post-harvest losses.
9. It does not require sophisticated equipment.
10. Properly dried food can remain usable for extended periods when stored correctly.

Disadvantages of sun drying

1. It depends on suitable weather conditions.
2. It may take several days.
3. Food may be contaminated by dust.
4. Insects and birds may attack exposed food.
5. Rain may interrupt the drying process.
6. Uneven drying may cause spoilage.
7. Some vitamins may be lost through exposure to heat, light and air.
8. It requires sufficient drying space.
9. It may be difficult during rainy seasons.

2. Smoking



Meaning

Smoking is a food preservation method in which food is exposed to smoke produced by burning suitable wood or other approved smoking materials under controlled conditions.

Smoke contains substances that can inhibit some microorganisms and slow down oxidation. Smoking may also involve drying, which reduces moisture content.

Foods preserved through smoking

- Fish.
- Meat.
- Certain poultry products.

Procedure for smoking fish

1. Select fresh, good-quality fish.
2. Clean the fish thoroughly.
3. Remove unwanted internal organs where appropriate.
4. Wash using safe water.
5. Cut the fish into suitable pieces.
6. Apply an appropriate amount of salt where the process requires it.
7. Arrange the fish on clean smoking racks.
8. Expose the fish to controlled smoke and heat.
9. Maintain suitable smoking conditions.
10. Ensure the fish is adequately processed.
11. Cool the fish in a clean protected environment.
12. Package and store appropriately.

Advantages of smoking

1. Extends the storage life of certain foods.
2. Adds a characteristic flavour.
3. Reduces moisture when combined with drying.
4. Can reduce microbial contamination when properly conducted.
5. Improves the variety of food products.
6. Can be practised in rural communities.
7. Helps preserve fish and meat during periods of high supply.

Disadvantages of smoking

1. Requires suitable smoking equipment.
2. Improper smoking may leave food inadequately preserved.
3. Excessive exposure to smoke may produce undesirable compounds.

4. Traditional smoking can expose food handlers to smoke inhalation.
5. It may alter the natural taste of food.
6. It requires fuel.
7. Poor storage after smoking can still result in spoilage.

3. Salting



Meaning

Salting is a food preservation method in which salt is applied to food to reduce the water available for microbial growth.

Salt draws water out of food tissues and creates conditions that inhibit many microorganisms.

Foods preserved through salting

- Fish.
- Meat.
- Certain vegetables.

Methods of salting

a) Dry salting

Salt is rubbed or spread directly onto the surface of food.

b) Brining

Food is immersed in a prepared salt solution of appropriate concentration.

Procedure for dry salting fish

1. Select fresh fish.

2. Clean the fish thoroughly.
3. Remove unwanted internal organs.
4. Wash using safe water.
5. Apply suitable quantities of food-grade salt.
6. Arrange the fish in clean food-grade containers.
7. Allow sufficient contact time under controlled conditions.
8. Drain excess liquid where required.
9. Dry or package as appropriate.
10. Store under suitable conditions.

Advantages of salting

1. It reduces microbial growth.
2. It extends the storage life of suitable foods.
3. It is relatively inexpensive.
4. It requires simple equipment.
5. It improves flavour in some foods.
6. It is useful in fish and meat preservation.

Disadvantages of salting

1. Excessive salt intake is associated with high blood pressure.
2. It changes the natural taste of food.
3. It may make food excessively salty.
4. Some salt-sensitive microorganisms may still survive.
5. It may reduce the suitability of food for people on low-sodium diets.
6. Poor handling can still cause contamination.

4. Fermentation



Meaning

Fermentation is a food preservation method in which beneficial microorganisms convert food components, especially sugars, into acids, gases or alcohol under controlled conditions.

In many fermented foods, the acids produced lower the pH and inhibit the growth of certain harmful microorganisms.

Examples of fermented foods in Kenya

- Mursik.
- Fermented milk.
- Yoghurt.
- Fermented porridge.
- Fermented cassava products.
- Traditional fermented cereal products.

Procedure for preparing fermented milk

1. Obtain fresh milk from a healthy animal.
2. Filter the milk using clean equipment.
3. Heat or pasteurise the milk appropriately.
4. Cool it to the suitable temperature for the starter culture.
5. Add a safe, appropriate starter culture.
6. Transfer the milk into a clean, sanitised container.
7. Cover the container.
8. Allow fermentation under controlled conditions.
9. Monitor the development of acidity and texture.
10. Refrigerate the product after fermentation.
11. Store in clean, covered containers.

Advantages of fermentation

1. Extends the storage life of certain foods.
2. Produces characteristic flavours and textures.
3. Improves the variety of food products.
4. May improve the digestibility of some foods.
5. Can reduce certain antinutritional factors.
6. Some fermented foods contain beneficial live microorganisms.
7. Provides opportunities for small-scale food businesses.
8. Supports the utilisation of locally available raw materials.

Disadvantages of fermentation

1. It requires suitable microorganisms.
2. Poor hygiene may introduce harmful microorganisms.
3. Incorrect fermentation conditions may spoil food.
4. It may produce strong flavours that some people dislike.
5. Some nutrients may be reduced during fermentation.
6. It requires careful monitoring.
7. Not every fermented food is automatically safe.

5. Preservation using sugar



Meaning

Preservation using sugar is a method in which sufficient sugar is added to food to reduce the water available for microbial growth.

High sugar concentrations create conditions that inhibit many bacteria, although some yeasts and moulds can still grow.

Foods preserved using sugar

- Mangoes.
- Strawberries.
- Pineapples.
- Oranges.
- Guavas.

- Berries.
- Other suitable fruits.

Examples of products

- Fruit jams.
- Jellies.
- Marmalades.
- Fruit preserves.
- Fruit syrups.

Procedure for preparing mango jam

1. Select ripe, healthy mangoes.
2. Wash the fruits thoroughly.
3. Peel and remove the seeds.
4. Cut the mango flesh into small pieces.
5. Mash or pulp the fruit.
6. Measure the fruit pulp.
7. Add the appropriate quantity of sugar according to a tested recipe.
8. Heat the mixture while stirring.
9. Continue cooking until the desired consistency is achieved.
10. Prepare clean, suitable jars using a validated canning or hot-fill procedure.
11. Fill the jars according to the tested preservation process.
12. Seal and process appropriately.
13. Cool and check the seals.
14. Label and store according to the validated recipe.

Advantages of sugar preservation

1. Extends the storage life of suitable fruits.
2. Improves flavour and sweetness.
3. Provides a way of utilising surplus seasonal fruits.
4. Creates marketable food products.
5. Can be carried out at household level.
6. Adds variety to family diets.

Disadvantages of sugar preservation

1. Products may contain high amounts of sugar.
2. It may not be suitable for people who need to restrict sugar intake.

3. Some vitamins may be destroyed by prolonged heating.
4. It requires sufficient sugar.
5. Poorly processed products may develop mould or ferment.
6. It may be expensive when sugar prices are high.

6. Traditional storage using dry containers



Meaning

Traditional dry storage is a method of preserving food by keeping properly dried food in suitable containers or storage structures that protect it from moisture, insects, rodents and other contaminants.

Foods preserved

- Maize.
- Beans.
- Millet.
- Sorghum.
- Rice.
- Green grams.
- Cowpeas.
- Groundnuts.

Examples of traditional storage facilities

- Granaries.
- Clay pots.
- Woven baskets.
- Dry storage bins.
- Properly prepared traditional grain stores.

Procedure for storing dry cereals

1. Harvest mature cereals.
2. Remove damaged and mouldy grains.
3. Dry the grains adequately.
4. Clean the storage containers.
5. Ensure that the containers are completely dry.
6. Inspect the storage area for insects and rodents.
7. Place the grains in clean containers.
8. Cover or seal the containers appropriately.
9. Store in a cool, dry and well-ventilated area where suitable.
10. Inspect stored food regularly for signs of infestation and moisture.

Advantages

1. Requires relatively simple equipment.
2. Is affordable for many households.
3. Allows farmers to store surplus harvests.
4. Reduces losses when properly managed.
5. Supports household food security.
6. Allows food to be available during periods of scarcity.

Disadvantages

1. Some traditional containers may not provide complete protection against insects.
2. Moisture may enter poorly constructed stores.
3. Rodents may damage stored food.
4. Storage space may be limited.
5. Poorly dried grains may develop mould.
6. Regular inspection is necessary.

B. MODERN FOOD PRESERVATION METHODS

Modern food preservation methods involve the use of scientific knowledge, specialised equipment, controlled environmental conditions and improved packaging technologies to extend food storage life.

Examples include:

- Refrigeration.
- Freezing.
- Pasteurisation.
- Sterilisation and canning.
- Vacuum packaging.
- Dehydration using mechanical dryers.
- Chemical preservation using approved preservatives.
- Controlled-atmosphere storage.

1. Refrigeration



Meaning

Refrigeration is a food preservation method in which food is stored at low temperatures, generally around 0°C to 5°C in domestic refrigerators, to slow down microbial growth and enzyme activity.

Refrigeration does not destroy all microorganisms. It slows down their multiplication.

Foods preserved through refrigeration

- Milk.
- Yoghurt.
- Fresh meat.
- Fish.
- Fruits.

- Vegetables.
- Cooked food.
- Eggs.

Procedure for refrigerating food

1. Select fresh and good-quality food.
2. Clean the refrigerator regularly.
3. Ensure that the refrigerator maintains an appropriate temperature.
4. Place food in clean, covered containers.
5. Separate raw meat and fish from ready-to-eat foods.
6. Store raw meat and fish in leak-proof containers on the lowest shelf.
7. Place cooked foods in suitable covered containers.
8. Avoid overloading the refrigerator.
9. Keep refrigerator doors closed as much as possible.
10. Check stored food regularly.
11. Use older food before newly purchased food where appropriate.
12. Discard food that is unsafe.

Advantages of refrigeration

1. Slows down microbial growth.
2. Delays food spoilage.
3. Maintains the freshness of many foods.
4. Helps retain the natural texture of food.
5. Can preserve many vitamins better than prolonged heating.
6. Allows households to store leftovers safely for short periods.
7. Reduces food wastage.
8. Makes a variety of seasonal foods available for longer.

Disadvantages of refrigeration

1. Requires electricity or another reliable power source.
2. Refrigerators are expensive to purchase.
3. Running and maintenance costs may be high.
4. Storage space is limited.
5. Some foods may develop undesirable texture changes.
6. Food may still spoil if stored for too long.
7. Power interruptions may affect food safety.

2. Freezing



Meaning

Freezing is a method of food preservation in which food is stored at temperatures at or below approximately -18°C to prevent microbial multiplication and slow down chemical and enzymatic changes.

Freezing does not necessarily kill all microorganisms. Many survive and may become active again when food is thawed.

Foods preserved through freezing

- Meat.
- Fish.
- Chicken.
- Green peas.
- Beans.
- Fruits.
- Vegetables.
- Suitable prepared foods.

Procedure for freezing food

1. Select fresh and good-quality food.

2. Clean the food appropriately.
3. Cut food into suitable portions.
4. Blanch certain vegetables where appropriate.
5. Drain excess water.
6. Pack food in suitable freezer-safe packaging.
7. Remove excess air where appropriate.
8. Label each package with the food name and date.
9. Place food in the freezer.
10. Maintain the recommended freezing temperature.
11. Avoid unnecessary opening of the freezer.
12. Thaw food safely under refrigeration or using another safe method.

Advantages of freezing

1. Greatly slows down microbial activity.
2. Preserves food for extended periods when temperatures remain stable.
3. Helps maintain the nutritional quality of many foods.
4. Reduces dependence on daily food shopping.
5. Allows seasonal foods to be stored for later use.
6. Preserves meat, fish and vegetables.
7. Helps reduce food wastage.
8. Makes meal preparation more convenient.

Disadvantages of freezing

1. Requires electricity or a reliable alternative power supply.
2. Freezers are relatively expensive.
3. Some foods may lose their original texture.
4. Large ice crystals may damage food tissues.
5. Freezer burn may affect food quality.
6. Food quality may deteriorate during prolonged storage.
7. Improper thawing may encourage microbial growth.

3. Pasteurisation



Meaning

Pasteurisation is a heat treatment process in which food, especially milk and fruit juices, is heated to a specified temperature for a specified time and then cooled rapidly to reduce harmful microorganisms and spoilage organisms.

It improves food safety and extends storage life but does not make food completely sterile.

Examples of pasteurised foods

- Milk.
- Fruit juices.
- Liquid egg products.
- Certain dairy products.

Common pasteurisation methods

a) Low-temperature long-time (LTLT)

Milk is heated to approximately 63°C for 30 minutes and then cooled rapidly.

b) High-temperature short-time (HTST)

Milk is heated to approximately 72°C for 15 seconds and then cooled rapidly.

c) Ultra-high-temperature (UHT) treatment

Milk is treated at a very high temperature, commonly around 135–150°C for a few seconds, followed by aseptic packaging.

UHT treatment is a separate, more intensive commercial heat treatment that allows unopened milk to remain shelf-stable when properly packaged.

Procedure for pasteurising milk using the LTLT method

1. Obtain fresh milk from a reliable source.
2. Filter the milk using clean equipment.
3. Pour the milk into a suitable pasteurisation vessel.
4. Heat the milk to approximately 63°C.
5. Maintain the temperature for 30 minutes.
6. Stir carefully where appropriate to ensure even heating.
7. Cool rapidly to the recommended temperature.
8. Transfer the milk into clean, suitable containers.
9. Seal and label the containers.
10. Refrigerate the milk.
11. Observe the recommended storage period.

Advantages of pasteurisation

1. Destroys many disease-causing microorganisms.
2. Reduces spoilage organisms.
3. Improves the safety of milk and suitable juices.
4. Extends the storage life of products.
5. Retains most of the nutritional value of milk.
6. Improves consumer confidence.
7. Supports commercial dairy processing.

Disadvantages of pasteurisation

1. Requires heating equipment.
2. Requires accurate temperature control.
3. Some heat-sensitive nutrients may be reduced slightly.
4. It does not destroy all microorganisms or bacterial spores.
5. Pasteurised milk requires appropriate storage.
6. Improper processing may compromise safety.

4. Sterilisation and canning



Meaning of sterilisation

Sterilisation is a preservation process involving the use of sufficiently high temperatures or other validated treatments to destroy microorganisms, including heat-resistant spores, to achieve the required level of commercial sterility.

Meaning of canning

Canning is a food preservation method in which food is placed in suitable airtight containers and processed using a validated heat treatment to prevent the growth of dangerous microorganisms and spoilage organisms during storage.

Canning is particularly useful for preserving foods over extended periods.

Foods preserved through canning

- Tomatoes.
- Green peas.
- Beans.
- Sweet corn.
- Pineapples.
- Peaches.
- Fish.
- Meat.
- Fruit products.

Procedure for canning suitable foods

1. Select fresh, healthy food.
2. Wash the food thoroughly.
3. Peel, cut or prepare it appropriately.
4. Prepare clean, suitable jars or cans.
5. Fill the containers according to a tested preservation recipe.
6. Add the required liquid or preserving medium.
7. Remove trapped air where the process requires it.
8. Apply the correct lids.
9. Process using a validated time, temperature and pressure schedule appropriate for the food.
10. Allow containers to cool as instructed.
11. Inspect seals and closures.
12. Label and store in a clean, cool and dry place.

Important food safety note

Low-acid foods such as meat, fish and most vegetables require appropriate pressure canning or validated commercial processing. Ordinary boiling-water treatment is not sufficient to make such foods safe for long-term room-temperature storage because dangerous bacterial spores may survive.

Never use an untested home-canning recipe for low-acid foods.

Advantages of canning

1. Extends the storage life of suitable foods.
2. Makes seasonal foods available throughout the year.
3. Reduces post-harvest losses.
4. Makes transportation and distribution easier.
5. Protects food from insects and external contamination when properly sealed.
6. Provides convenient ready-to-use foods.
7. Supports food processing businesses.
8. Reduces the need for refrigeration of unopened commercially processed products.

Disadvantages of canning

1. Requires specialised equipment.
2. Initial processing costs may be high.
3. Some vitamins are destroyed or reduced by heating.
4. Incorrect processing may cause serious food safety hazards.
5. Damaged cans may contaminate food.
6. Some canned foods contain high amounts of added salt or sugar.

7. Packaging materials may contribute to environmental pollution.

5. Vacuum packaging



Meaning

Vacuum packaging is a food preservation technique in which air is removed from a suitable package before it is sealed.

Removing most of the air reduces oxygen exposure and slows down oxidation and the growth of many aerobic microorganisms.

Foods preserved through vacuum packaging

- Fresh meat.
- Fish.
- Cheese.
- Coffee.
- Dried foods.
- Certain processed foods.

Procedure

1. Select fresh and suitable food.
2. Clean and prepare the food appropriately.
3. Place the food in a food-grade vacuum packaging bag.
4. Insert the bag into the vacuum packaging machine.
5. Remove the air using the machine.

6. Seal the package securely.
7. Label the package.
8. Store under the appropriate temperature conditions.

Advantages

1. Reduces exposure to oxygen.
2. Slows oxidation and rancidity.
3. Helps preserve food quality.
4. Reduces package volume.
5. Prevents certain external contaminants from entering.
6. Improves storage and transportation convenience.

Disadvantages

1. Requires a vacuum packaging machine.
2. Special packaging materials may be expensive.
3. It does not destroy all microorganisms.
4. Some dangerous microorganisms can grow in oxygen-free conditions.
5. Temperature control is still necessary for perishable foods.
6. Damaged packages may allow air and microorganisms to enter.

6. Mechanical dehydration



Meaning

Mechanical dehydration is a food preservation method in which moisture is removed from food using controlled heat and moving air supplied by a drying machine.

It is a modern alternative to traditional sun drying.

Foods preserved

- Mangoes.
- Bananas.
- Tomatoes.
- Vegetables.
- Herbs.
- Cereals.
- Fish.
- Meat, using suitable validated processes.

Procedure

1. Select fresh, good-quality food.
2. Wash and prepare the food.
3. Cut into suitable uniform pieces.
4. Blanch where appropriate.
5. Arrange food on clean dehydrator trays.
6. Set the correct temperature.
7. Allow hot air to circulate around the food.
8. Monitor the drying process.
9. Check that the food reaches the required dryness.
10. Cool the dried food.
11. Package in moisture-resistant containers.
12. Label and store appropriately.

Advantages

1. Allows controlled drying.
2. Reduces dependence on weather.
3. Reduces contamination from dust and insects.
4. Produces more uniform drying.
5. Saves drying space.
6. Can preserve a wide variety of foods.
7. Is suitable for commercial food processing.

Disadvantages

1. Requires electricity or another energy source.

2. Machines may be expensive.
3. Requires maintenance.
4. Incorrect temperatures may affect food quality.
5. Drying may take several hours.
6. Some heat-sensitive nutrients may be reduced.

7. Chemical preservation



Meaning

Chemical preservation is a method of food preservation in which approved chemical substances are added to food in controlled quantities to delay microbial growth, oxidation or other deterioration processes.

Examples of approved preservatives in appropriate food applications

- Sodium benzoate.
- Potassium sorbate.
- Sulphur dioxide and certain sulphites.
- Certain permitted nitrites and nitrates in processed meat products.

Foods that may use approved preservatives

- Fruit juices.
- Jams.
- Sauces.
- Pickles.
- Certain processed meat products.
- Some dried fruit products.

How chemical preservation works

1. Some preservatives inhibit the growth of bacteria, yeasts and moulds.
2. Some reduce oxidation.

3. Some delay undesirable colour changes.
4. Some prevent the development of unwanted flavours.
5. Some help maintain product quality during storage.

Advantages

1. Can extend food storage life.
2. Helps maintain product quality.
3. Can reduce microbial spoilage.
4. Supports commercial food processing.
5. May reduce food wastage.
6. Can be effective in small quantities when correctly used.

Disadvantages

1. Some consumers may be sensitive to particular preservatives.
2. Excessive or unauthorised use may be harmful.
3. Some preservatives may affect taste or appearance.
4. Correct measurement is necessary.
5. Some consumers prefer foods with fewer additives.
6. Legal requirements and food safety standards must be followed.

Important: Never recommend the use of industrial chemicals or unapproved substances in food. Preservatives must be food-grade, permitted for the particular food and used within the legally prescribed limits.

8. Pickling



Meaning

Pickling is a food preservation method in which foods are preserved using an acidic solution, commonly vinegar, or through controlled fermentation that produces acid.

The increased acidity inhibits the growth of many microorganisms.

Foods preserved through pickling

- Cucumbers.
- Onions.
- Carrots.
- Green chillies.
- Cabbage.
- Beetroot.
- Certain fruits.

Procedure for pickling vegetables using vinegar

1. Select fresh, firm vegetables.
2. Wash using safe water.
3. Remove damaged parts.
4. Cut into suitable pieces.
5. Prepare the vinegar-based pickling solution using a tested recipe.
6. Prepare clean, suitable jars.
7. Arrange the vegetables in the jars.
8. Add the prepared solution.
9. Remove trapped air where necessary.
10. Seal and process according to a validated recipe.
11. Cool and label the jars.
12. Store as directed by the recipe.

Advantages

1. Extends the storage life of suitable vegetables.
2. Produces distinctive flavours.
3. Provides variety in meals.
4. Helps utilise surplus seasonal produce.
5. Can be practised at household level.
6. Supports small-scale food enterprises.

Disadvantages

1. Produces an acidic taste.
2. Some vitamins may be lost during processing.
3. Requires suitable ingredients and containers.
4. Incorrect acidity may make food unsafe.

5. High salt content in some recipes may be unsuitable for certain consumers.

9. Irradiation



Meaning

Food irradiation is a preservation technique in which food is exposed to controlled amounts of ionising radiation to reduce harmful microorganisms, control insects and delay certain forms of deterioration.

It is a regulated food-processing technology.

Foods that may be irradiated

- Spices.
- Cereals.
- Certain fruits.
- Vegetables.
- Some meat products.

Advantages

1. Reduces certain harmful microorganisms.
2. Controls insects in stored food.
3. Can delay sprouting in potatoes and onions.
4. Helps reduce post-harvest losses.
5. Can extend the storage life of certain foods.
6. Can be applied without significantly increasing food temperature.

Disadvantages

1. Requires specialised facilities.
2. Equipment and processing costs are high.
3. Requires trained personnel.
4. Some consumers may misunderstand the technology.

5. It does not replace good hygiene and proper storage.
6. It cannot make spoiled food safe.

Important: Properly irradiated food does not become radioactive.

1.3.6 COMPARISON OF TRADITIONAL AND MODERN FOOD PRESERVATION METHODS

Traditional methods	Modern methods
Sun drying	Mechanical dehydration
Smoking	Controlled industrial smoking
Salting	Controlled curing and brining
Traditional fermentation	Controlled commercial fermentation
Sugar preservation	Industrial jam and jelly processing
Traditional dry storage	Hermetic and controlled storage
Natural drying	Freeze-drying
Traditional pickling	Standardised commercial pickling

Differences between traditional and modern food preservation

Traditional methods	Modern methods
Often use locally available resources	Often use specialised equipment
Generally require lower initial investment	May require higher investment
May depend on weather conditions	Many are controlled independently of weather
Often practised at household level	Common in commercial food industries and households
May have less precise control of processing conditions	Often allow more accurate process control
May expose food to dust and insects	Can provide better protection when properly operated
May require more manual labour	Some processes are automated
Storage periods may vary considerably	Storage conditions and shelf life can be standardised

Important: Traditional methods are not necessarily unsafe or inferior. When properly practised, they can be effective, affordable and appropriate for local communities. Modern methods also require proper hygiene and process control.

1.3.7 FOOD PRESERVATION ACCORDING TO FOOD GROUPS

Different foods require different preservation methods because they differ in moisture content, nutrient composition, structure and susceptibility to spoilage.

A. Preservation of cereals



Cereals are grains obtained from cultivated grasses.

Examples

- Maize.
- Rice.
- Wheat.
- Sorghum.
- Millet.
- Barley.

Methods of preserving cereals

1. Sun drying.
2. Mechanical drying.
3. Proper dry storage.
4. Hermetic storage.
5. Controlled fumigation by trained and authorised personnel where permitted.

Procedure for preserving maize

1. Harvest mature maize.
2. Dry the maize cobs appropriately.
3. Shell the grains.
4. Remove broken, discoloured and mouldy grains.
5. Clean the grains.
6. Dry to a safe moisture level.
7. Cool before storage.
8. Place in clean, dry, suitable storage bags or hermetic containers.
9. Keep the storage area dry and protected.
10. Inspect regularly for pests and moisture.

Importance of preserving cereals

- Prevents mould growth.
- Reduces aflatoxin risks when proper drying and storage are practised.
- Reduces insect infestation.
- Reduces post-harvest losses.
- Ensures food availability.
- Supports household income.

B. Preservation of pulses and legumes



Pulses are edible dry seeds of leguminous plants.

Examples

- Beans.
- Green grams.
- Cowpeas.
- Lentils.
- Pigeon peas.
- Chickpeas.

Methods of preservation

- Sun drying.
- Mechanical drying.
- Hermetic storage.
- Airtight dry storage.
- Freezing cooked pulses.
- Canning.

Procedure

1. Harvest mature pulses.
2. Remove pods and foreign materials.

3. Dry thoroughly.
4. Sort to remove damaged seeds.
5. Clean the storage containers.
6. Package in suitable moisture-resistant containers.
7. Seal properly where appropriate.
8. Store in a cool, dry place.
9. Inspect regularly for pests and mould.

C. Preservation of fruits



Fruits are generally rich in vitamins, minerals, fibre and water.

Examples

- Mangoes.
- Bananas.
- Oranges.
- Pineapples.
- Pawpaws.
- Avocados.
- Watermelons.
- Guavas.

Methods of preserving fruits

1. Refrigeration.
2. Freezing.
3. Drying.

4. Jam making.
5. Jelly making.
6. Canning.
7. Pasteurised juice production.
8. Pickling for suitable fruits.

Example: Preserving mangoes through drying

1. Select ripe but firm mangoes.
2. Wash thoroughly.
3. Peel the fruits.
4. Remove the seeds.
5. Slice the flesh uniformly.
6. Arrange slices on clean drying trays.
7. Dry using a solar dryer or food dehydrator.
8. Ensure adequate drying.
9. Cool completely.
10. Package in moisture-resistant bags.
11. Label and store in a dry place.

Importance

- Prevents fruit wastage during harvest seasons.
- Provides fruits outside their harvest seasons.
- Creates value-added products.
- Supports household income.
- Provides convenient food products.

D. Preservation of vegetables



Examples

- Sukuma wiki.
- Spinach.
- Managu.
- Kunde.
- Cabbage.
- Carrots.
- Tomatoes.
- Green peas.
- French beans.

Methods of preservation

1. Refrigeration.
2. Freezing.
3. Blanching followed by freezing.
4. Drying.
5. Canning.
6. Pickling.
7. Fermentation for suitable vegetables.

Example: Preserving sukuma wiki through freezing

1. Select fresh, healthy leaves.
2. Remove damaged leaves.
3. Wash thoroughly.
4. Cut into suitable pieces.
5. Blanch briefly in boiling water.
6. Cool rapidly in clean cold water.
7. Drain thoroughly.
8. Pack in freezer-safe bags.
9. Remove excess air.
10. Label the packages.
11. Freeze promptly.
12. Maintain a constant freezing temperature.

Importance

- Reduces vegetable wastage.

- Maintains availability of vegetables.
- Helps preserve seasonal produce.
- Provides convenience in meal preparation.

E. Preservation of meat



Meat is a highly perishable food because it contains moisture and nutrients that support microbial growth.

Examples

- Beef.
- Goat meat.
- Mutton.
- Pork.
- Chicken.
- Turkey.

Methods of preservation

- Refrigeration.
- Freezing.
- Smoking.
- Salting and curing.
- Drying using validated processes.
- Canning using appropriate commercial or pressure-processing methods.

Procedure for preserving meat through freezing

1. Obtain fresh meat from an approved and hygienic source.
2. Inspect the meat for quality.
3. Cut into suitable portions.
4. Package in food-grade freezer bags.
5. Remove excess air.
6. Label with the type of meat and date.
7. Place in the freezer promptly.
8. Maintain the recommended freezing temperature.
9. Avoid repeated thawing and refreezing.
10. Thaw safely before cooking.

Importance

- Extends the storage life of meat.
- Reduces spoilage.
- Helps maintain food supplies.
- Reduces unnecessary food wastage.

F. Preservation of fish



Fish is highly perishable because of its high moisture content and delicate tissues.

Examples

- Tilapia.
- Nile perch.
- Catfish.
- Sardines (omena).
- Tuna.

Methods of preservation

1. Refrigeration.
2. Freezing.
3. Smoking.
4. Drying.
5. Salting.
6. Canning.
7. Pickling for suitable fish products.

Importance

- Reduces post-harvest losses.
- Extends the availability of fish.
- Supports fishing communities.
- Facilitates transportation and marketing.
- Improves food security.

G. Preservation of milk and dairy products



Milk is highly perishable because it contains water, proteins, fats, lactose, minerals and vitamins.

Examples

- Fresh milk.
- Yoghurt.
- Fermented milk.
- Cheese.
- Cream.
- Butter.

Methods of preservation

- Refrigeration.
- Pasteurisation.
- UHT processing.
- Fermentation.
- Cheese making.
- Butter processing.
- Freezing for suitable dairy products.

Importance

1. Reduces microbial spoilage.
2. Extends the storage life of dairy products.
3. Promotes milk safety.
4. Reduces losses for dairy farmers.
5. Supports dairy businesses.
6. Provides a continuous supply of dairy products.

1.3.8 IMPORTANCE OF FOOD PRESERVATION

Food preservation is essential to individuals, families, farmers, food industries and the national economy.



1. Reduces food wastage

Food preservation prevents large quantities of food from spoiling before they are consumed.

For example, surplus mangoes can be processed into jam or dried mango products instead of being discarded.

2. Promotes food security

Food preservation ensures that food remains available beyond the harvesting season.

For example, properly dried maize and beans can be stored and consumed during dry seasons.

3. Extends the shelf life of food

Preservation slows down deterioration and allows food to remain usable for longer periods.

4. Maintains food quality

Appropriate preservation methods help maintain desirable food characteristics such as colour, texture, flavour and nutritional value.

5. Reduces post-harvest losses

Farmers can preserve agricultural produce rather than losing it because of inadequate storage facilities or market delays.

6. Supports household food supplies

Families can store surplus food for future use, reducing the need for frequent purchases.

7. Promotes income generation

Preserved foods can be processed and sold to consumers.

Examples:

- Fruit jams.
- Dried vegetables.
- Smoked fish.
- Yoghurt.
- Fruit juices.
- Pickled vegetables.

8. Supports food processing industries

Food preservation creates opportunities for commercial food production and value addition.

9. Facilitates transportation

Preserved foods, especially dried and properly packaged products, can be transported more conveniently.

10. Makes seasonal foods available throughout the year

Fruits and vegetables can be preserved during periods of abundance for consumption during periods of scarcity.

11. Promotes nutrition

Preservation can make nutritious foods available when fresh produce is not readily accessible.

12. Reduces pressure on household budgets

Families can purchase food when it is plentiful and preserve it for future consumption, where storage and prices make this economical.

13. Promotes employment opportunities

Food processing and preservation create employment in:

- Food factories.
- Dairy processing plants.
- Fruit processing enterprises.
- Fish processing industries.
- Packaging industries.
- Small-scale food businesses.

14. Promotes agricultural development

Farmers gain better opportunities to market their produce when they can preserve it and reduce losses.

15. Improves food distribution

Preserved foods can be transported and supplied to areas that do not produce them.

16. Reduces economic losses

Farmers, traders and households reduce financial losses associated with spoiled food.

1.3.9 FACTORS TO CONSIDER WHEN SELECTING A FOOD PRESERVATION METHOD

The choice of preservation method depends on the nature of the food and available resources.

1. Type of food

Different foods require different preservation techniques.

Examples:

- Milk can be pasteurised or refrigerated.
- Maize can be dried.
- Fish can be frozen or smoked.
- Mangoes can be dried or processed into jam.

2. Moisture content

Foods with high moisture content are generally more perishable and may require refrigeration, freezing or processing.

3. Nutritional value

The preservation method should retain as many nutrients as possible.

For example, prolonged heating may reduce some heat-sensitive vitamins.

4. Cost

The method should be affordable to the household or business.

5. Availability of equipment

The availability of refrigerators, freezers, dryers, jars and packaging equipment affects the choice.

6. Availability of electricity

Freezing and refrigeration depend on a reliable power supply or suitable alternative energy systems.

7. Climatic conditions

Sun drying is easier during dry, sunny periods than during prolonged rainy seasons.

8. Intended storage period

Some methods are suitable for short-term storage, while others can preserve food for extended periods.

9. Storage facilities

The available storage environment influences the choice of preservation method.

10. Food safety

The method must control foodborne hazards and prevent contamination.

11. Labour requirements

Some preservation methods require considerable labour, while others are automated.

12. Consumer preferences

The taste, colour, texture and appearance of preserved food should be acceptable to consumers.

13. Packaging materials

Suitable packaging should be available to protect the preserved food.

14. Market demand

Commercial food processors should consider consumer demand and market requirements.

15. Availability of raw materials

The method should suit the quantities and types of food available for preservation.

16. Environmental impact

Consider energy use, packaging waste and the sustainability of the preservation method.

1.3.10 FOOD PACKAGING AND STORAGE AFTER PRESERVATION



Meaning of food packaging

Food packaging is the process of enclosing food in suitable materials to protect it from contamination, physical damage, moisture, air and other factors that may reduce its quality.

Functions of food packaging

1. Protects food from contamination.
2. Prevents physical damage.
3. Reduces exposure to moisture.
4. Reduces exposure to air where appropriate.
5. Facilitates transportation.
6. Makes storage easier.
7. Provides product identification.
8. Provides information about ingredients.
9. Provides storage instructions.
10. Improves product presentation.
11. Supports marketing.
12. Helps maintain product quality.

Types of food packaging materials

1. Glass containers

Examples:

- Jam jars.
- Juice bottles.
- Pickle jars.

Advantages:

- Do not easily react with food.
- Can provide an effective barrier to moisture and gases.
- Transparent glass allows consumers to see the food.
- Can be reused where safe and appropriate.

Disadvantages:

- Break easily.
- May be heavy.
- Require careful handling.

2. Plastic containers

Examples:

- Food-grade storage containers.
- Food packaging bags.
- Bottles.

Advantages:

- Lightweight.
- Easy to handle.
- Available in different shapes and sizes.
- Some provide good moisture protection.

Disadvantages:

- Some plastics may be unsuitable for hot foods.
- May be damaged by heat.
- Can contribute to environmental pollution.

3. Metal containers

Examples:

- Tin cans.
- Aluminium cans.

Advantages:

- Strong.
- Protect food from light.
- Can provide an effective barrier to air and moisture.
- Suitable for commercial food processing.

Disadvantages:

- May corrode if damaged or unsuitable.
- Can be expensive.
- Some types require special processing equipment.

4. Paper and cardboard

Examples:

- Cereal cartons.
- Paper food bags.
- Cartons.

Advantages:

- Lightweight.
- Easy to print on.
- Can be recyclable.
- Convenient for dry foods.

Disadvantages:

- Can absorb moisture.
- May be damaged by water.
- Often require additional protective layers for food preservation.

5. Laminated packaging

This is packaging made by combining different materials to improve protection.

Examples:

- Long-life milk cartons.
- Laminated food pouches.

Advantages:

- Can provide protection against moisture, light and oxygen.
- Lightweight.
- Convenient for transportation.

Disadvantages:

- Some types are difficult to recycle.
- Require specialised manufacturing processes.

Information found on food labels

Food labels should provide appropriate information, including:

- Name of the food.
- Ingredients.
- Net quantity.
- Manufacturer's details.
- Date marking, such as the best-before or use-by date where applicable.
- Storage instructions.
- Preparation instructions where necessary.
- Allergen information.
- Batch or lot identification.
- Relevant food safety information.

Qualities of good food packaging

1. It should be clean.
2. It should be food-grade.
3. It should protect food from contamination.
4. It should be strong enough for the intended use.
5. It should not transfer harmful substances to food.
6. It should be suitable for the preservation method.
7. It should be easy to handle.
8. It should provide adequate closure or sealing.
9. It should be appropriately labelled.

1.3.11 FOOD STORAGE AFTER PRESERVATION

Food storage refers to keeping food under suitable conditions until it is required for consumption, processing or sale.

Requirements for proper food storage

1. Storage areas should be clean.
2. Storage facilities should be dry where dry foods are kept.
3. Food should be protected from insects and rodents.
4. Food containers should be clean and suitable.
5. Food should be stored at the recommended temperature.

6. Raw and cooked foods should be separated.
7. Chemicals should be stored away from food.
8. Food should be labelled appropriately.
9. Storage facilities should be inspected regularly.
10. Expired and unsafe foods should be discarded safely.

First In, First Out (FIFO)

FIFO is a stock management method in which food received or stored first is used or sold first, provided it remains safe and suitable.

Importance of FIFO

- Reduces food wastage.
- Prevents unnecessary accumulation of old stock.
- Improves stock control.
- Helps maintain food quality.
- Supports efficient household and commercial food management.

First Expired, First Out (FEFO)

FEFO is a stock management method in which foods with the earliest expiry or use-by dates are used or sold first.

It is particularly useful when different batches of food have different expiry dates.

1.3.12 FOOD HYGIENE AND SAFETY DURING FOOD PRESERVATION

Food hygiene refers to the practices and conditions necessary to maintain food cleanliness and prevent contamination during handling, processing, packaging and storage.

Food safety refers to ensuring that food does not cause harm to consumers when prepared and consumed according to its intended use.

A. Personal hygiene

1. Wash hands thoroughly with soap and safe running water before handling food.
2. Wear clean protective clothing.
3. Keep fingernails short and clean.
4. Cover hair appropriately.
5. Cover cuts and wounds using waterproof dressings.
6. Avoid handling food when suffering from illnesses that may contaminate it.
7. Avoid coughing or sneezing over food.
8. Remove jewellery that may contaminate food or fall into it.
9. Use clean towels and appropriate protective equipment.
10. Maintain personal cleanliness throughout food processing.

B. Hygiene of equipment and utensils

1. Clean all equipment before and after use.
2. Sanitise equipment where necessary.
3. Use food-grade containers.
4. Avoid cracked or damaged equipment.
5. Keep knives and cutting boards clean.
6. Use separate equipment for raw and cooked foods where necessary.
7. Store utensils in clean, dry places.
8. Follow manufacturers' instructions when using processing machines.

C. Hygiene of the working environment

1. Clean the food preparation area regularly.
2. Dispose of waste appropriately.
3. Control insects and rodents.
4. Ensure proper drainage.
5. Use safe water.
6. Keep food away from dust and smoke.
7. Maintain adequate ventilation.
8. Keep chemicals away from food.
9. Clean spills immediately.
10. Prevent animals from entering food preparation areas.

D. Safety precautions during food preservation

1. Use correct processing temperatures and times.
2. Follow tested food preservation procedures.
3. Avoid using mouldy or rotten raw materials.
4. Use approved food preservatives only.
5. Avoid tasting food that may be spoiled.
6. Ensure that food is adequately dried before dry storage.
7. Keep refrigerated foods at appropriate temperatures.
8. Maintain freezing temperatures.
9. Avoid repeated thawing and refreezing.
10. Use suitable food packaging materials.
11. Check containers for leaks, swelling and damage.
12. Label preserved foods appropriately.

13. Never consume food from swollen, leaking or badly damaged cans.
14. Never use ordinary household boiling as a substitute for validated pressure canning of low-acid foods.

1.3.13 FOOD PRESERVATION AND FOOD SECURITY IN KENYA



Meaning of food security

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Food preservation contributes to food security in several ways.

Four dimensions of food security

1. Food availability

This refers to the presence of sufficient quantities of food through local production, imports, food reserves and other supplies.

Food preservation supports availability by:

- Storing surplus harvests.
- Reducing post-harvest losses.
- Making seasonal foods available throughout the year.
- Maintaining food reserves for periods of scarcity.

2. Food access

This refers to the ability of individuals and households to obtain sufficient food through purchasing, production, exchange or other means.

Food preservation promotes access by:

- Reducing financial losses among farmers.
- Supporting food processing enterprises.
- Making food available in different markets.
- Allowing households to store food for future use.

3. Food utilisation

This refers to the proper use of food by the body, including adequate nutrition, food safety, clean water and appropriate food preparation.

Food preservation contributes by:

- Maintaining food quality.
- Reducing certain foodborne hazards when correctly practised.
- Making nutritious foods available outside their harvesting seasons.
- Supporting dietary variety.

4. Food stability

This refers to the ability to maintain food availability, access and utilisation over time, including during periods of drought, floods, economic difficulties and other disruptions.

Food preservation supports stability by:

- Reducing dependence on immediate harvests.
- Maintaining household food stocks.
- Reducing losses during seasonal fluctuations.
- Supporting food supplies during emergencies.

Food preservation and food security challenges in Kenya

Challenge	Possible solution
Inadequate storage facilities	Construct suitable storage facilities
High post-harvest losses	Improve drying and storage techniques
Unreliable electricity	Use suitable solar-powered preservation systems
Insect infestation	Use appropriate pest-control and hermetic storage
Aflatoxin contamination	Dry maize adequately and store it safely
Limited preservation knowledge	Conduct community education
High cost of modern equipment	Promote affordable appropriate technologies
Poor packaging	Train food processors in proper packaging
Seasonal food shortages	Preserve surplus agricultural produce
Food transportation difficulties	Promote suitable processing and packaging

1.3.14 ROLE OF FOOD PRESERVATION IN ENVIRONMENTAL CONSERVATION

Food preservation can contribute to environmental sustainability when appropriate methods are selected.

1. Reduces food waste

Less food is discarded, reducing the amount of organic waste entering disposal sites.

2. Promotes efficient use of agricultural resources

The water, land, labour and energy used to produce food are not wasted when food is properly preserved.

3. Encourages local food processing

Locally available food can be processed and sold, supporting community enterprises.

4. Reduces pressure on natural resources

Reducing food losses can reduce the need to produce additional food to replace wasted food.

5. Promotes responsible packaging

Using recyclable, reusable or appropriately biodegradable packaging can reduce environmental pollution.

6. Encourages renewable energy use

Solar dryers can reduce dependence on electricity and firewood for some drying activities.

7. Promotes sustainable livelihoods

Food processing and preservation can create employment and improve household incomes.

Environmental challenges associated with food preservation

- Excessive use of plastic packaging.
- Energy consumption by refrigerators and freezers.
- Smoke pollution from traditional smoking.
- Wastewater from food processing.
- Improper disposal of expired preservatives and packaging.
- Food waste from poorly managed processing industries.

Possible solutions

- Use energy-efficient equipment.
- Adopt solar drying.
- Recycle suitable packaging materials.
- Dispose of food-processing waste responsibly.
- Use cleaner smoking technologies.
- Avoid unnecessary packaging.
- Follow environmental regulations.

1.3.15 VALUE ADDITION THROUGH FOOD PRESERVATION

Meaning of value addition

Value addition is the process of changing raw agricultural produce into products with improved usefulness, quality, convenience, marketability or economic value.

Food preservation is an important way of adding value to agricultural products.







Examples of food value addition in Kenya

Raw material	Preserved or processed product
Mangoes	Mango juice, jam and dried mangoes
Milk	Yoghurt, cheese and fermented milk
Tomatoes	Tomato paste and sauce
Pineapples	Canned pineapple and juice
Fish	Smoked, dried and canned fish
Bananas	Dried bananas and banana flour
Chillies	Dried chilli powder and sauce
Vegetables	Dried vegetables and pickles
Groundnuts	Groundnut paste
Cereals	Flour and packaged cereal products

Importance of value addition

1. Increases the market value of agricultural produce.
2. Reduces post-harvest losses.
3. Creates employment.
4. Generates household income.
5. Promotes entrepreneurship.

6. Encourages innovation.
7. Improves market access.
8. Supports agricultural development.
9. Creates opportunities for women and youth.
10. Promotes the use of locally available raw materials.

1.3.16 PRACTICAL ACTIVITIES IN FOOD PRESERVATION

PRACTICAL ACTIVITY 1: PRESERVATION OF MANGOES THROUGH DRYING



Learning objective

By the end of the activity, the learner should be able to preserve mangoes through drying while observing food hygiene and safety.

Materials required

- Fresh ripe mangoes.
- Clean water.
- Knife.
- Chopping board.
- Vegetable peeler.
- Clean drying trays.

- Solar dryer or food dehydrator.
- Food-grade packaging bags.
- Labels.

Procedure

1. Select fresh and healthy mangoes.
2. Wash the mangoes using safe water.
3. Peel the mangoes.
4. Remove the seeds.
5. Cut the mango flesh into uniform slices.
6. Arrange the slices on clean drying trays.
7. Place the trays in a suitable solar dryer or food dehydrator.
8. Maintain suitable drying conditions.
9. Monitor the drying process.
10. Ensure the slices are adequately dried.
11. Allow the slices to cool completely.
12. Package in clean, moisture-resistant packaging.
13. Label the packages.
14. Store in a clean, dry place.

Expected outcomes

The learner should be able to:

- Select appropriate fruits.
- Apply drying as a preservation method.
- Observe food hygiene.
- Use food preservation equipment.
- Package preserved food correctly.
- Explain the importance of preserving seasonal fruits.

PRACTICAL ACTIVITY 2: PREPARATION OF FRUIT JAM



Learning objective

To demonstrate how fruits can be preserved through jam making.

Materials required

- Ripe mangoes or other suitable fruits.
- Sugar.
- Lemon juice where required by the tested recipe.
- Cooking pan.
- Wooden spoon.
- Knife.
- Chopping board.
- Measuring equipment.
- Suitable jars.
- Labels.

Procedure

1. Select healthy, ripe fruits.
2. Wash the fruits.
3. Peel and remove seeds where necessary.
4. Cut the fruits into small pieces.
5. Mash or pulp the fruits.
6. Measure the fruit pulp.
7. Add sugar according to a tested recipe.
8. Heat the mixture in a suitable pan.
9. Stir regularly to prevent burning.
10. Cook until the required consistency is achieved.
11. Prepare the jars using an appropriate validated method.
12. Fill and seal according to the tested processing procedure.
13. Cool and check the seals.
14. Label and store according to the recipe.

Expected learning outcomes

- Ability to select fruits for preservation.
- Ability to follow a tested jam-making procedure.
- Ability to observe hygiene and safety.
- Ability to explain the role of sugar in food preservation.
- Ability to identify opportunities for value addition.

PRACTICAL ACTIVITY 3: PRESERVATION OF VEGETABLES THROUGH DRYING



Materials required

- Fresh leafy vegetables.
- Clean water.
- Knife.
- Chopping board.
- Cooking pot.
- Drying trays.
- Solar dryer.
- Food-grade storage containers.

Procedure

1. Select fresh vegetables.
2. Remove damaged leaves.
3. Wash thoroughly using safe water.
4. Drain excess water.
5. Cut the vegetables into suitable pieces.
6. Blanch briefly where appropriate.
7. Drain and cool.
8. Spread the vegetables on clean drying trays.

9. Dry using a suitable solar dryer.
10. Monitor the drying process.
11. Ensure the vegetables are thoroughly dried.
12. Cool completely.
13. Package in clean, airtight moisture-resistant containers.
14. Label and store appropriately.

Expected learning outcomes

Learners should:

- Identify vegetables suitable for drying.
- Demonstrate appropriate drying techniques.
- Explain why moisture removal helps preserve food.
- Practise hygiene and safety.
- Appreciate the role of preservation in reducing vegetable wastage.

PRACTICAL ACTIVITY 4: DEMONSTRATION OF REFRIGERATION AND FREEZING



Materials required

- Refrigerator.
- Freezer.
- Fresh vegetables.
- Milk.
- Meat.

- Food-grade containers.
- Labels.
- Thermometer.

Procedure

1. Inspect the refrigerator and freezer.
2. Clean the storage compartments.
3. Check the temperature.
4. Prepare fresh foods appropriately.
5. Place foods in suitable containers.
6. Label the containers.
7. Arrange foods in appropriate compartments.
8. Separate raw foods from ready-to-eat foods.
9. Monitor temperatures.
10. Observe the changes in food storage conditions.
11. Discuss the importance of maintaining cold temperatures.

Expected outcomes

Learners should be able to:

- Differentiate refrigeration from freezing.
- Identify foods suitable for each method.
- Arrange foods correctly in storage equipment.
- Explain the role of low temperatures in food preservation.
- Observe food safety requirements.

PRACTICAL ACTIVITY 5: TRADITIONAL AND MODERN FOOD PRESERVATION EXHIBITION

Activity

Learners organise a classroom exhibition showing traditional and modern methods of preserving food.

Suggested exhibits

Traditional exhibits	Modern exhibits
Dried maize	Mechanical grain dryer
Dried vegetables	Electric dehydrator
Smoked fish	Commercial vacuum-packed fish
Fermented milk	Commercial yoghurt
Traditional grain storage	Hermetic storage bags
Homemade fruit preserves	Commercial canned fruits

Learner tasks

1. Identify each preservation method.
2. Explain the principle behind the method.
3. Identify the foods preserved.
4. Explain advantages and disadvantages.
5. Identify equipment used.
6. Demonstrate food hygiene.
7. Compare traditional and modern techniques.
8. Recommend suitable methods for Kenyan households.

1.3.17 ENTREPRENEURSHIP OPPORTUNITIES IN FOOD PRESERVATION

Food preservation provides opportunities for self-employment and business development in Kenya.

Possible food preservation businesses

1. Fruit drying enterprise.
2. Mango jam production.
3. Yoghurt production.
4. Fermented milk production.
5. Tomato sauce processing.
6. Dried vegetable production.
7. Smoked fish processing.
8. Cereal drying and packaging.
9. Fruit juice production.
10. Pickle production.
11. Frozen food distribution.
12. Groundnut paste production.

Qualities of a successful food preservation entrepreneur

- Knowledge of food preservation.
- Creativity and innovation.
- Good hygiene practices.
- Financial management skills.
- Marketing skills.
- Ability to identify customer needs.
- Knowledge of packaging.
- Ability to maintain product quality.

- Understanding of food safety requirements.
- Commitment to legal and regulatory compliance.

Considerations before starting a food preservation business

1. Availability of raw materials.
2. Cost of equipment.
3. Availability of a suitable processing site.
4. Availability of water and electricity.
5. Market demand.
6. Cost of packaging.
7. Labour requirements.
8. Food safety requirements.
9. Business registration and applicable permits.
10. Storage and transportation facilities.

REVISION EXERCISES

SUB-STRAND 1.3: FOOD PRESERVATION

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Instructions: Answer all questions by selecting the correct answer from the alternatives A, B, C and D. Each question carries 1 mark.

1. What is food preservation?

A. The process of preparing food for immediate consumption.
B. The process of preventing or delaying food spoilage.
C. The process of increasing food wastage.
D. The process of purchasing food from the market.

2. Which of the following is a major cause of food spoilage?

A. Proper packaging.
B. Refrigeration.
C. Microbial growth.
D. Adequate drying.

3. Which group consists entirely of microorganisms associated with food spoilage?

A. Bacteria, yeasts and moulds.
B. Insects, rodents and birds.
C. Plants, animals and fungi.
D. Minerals, vitamins and proteins.

4. The growth of mould on bread is an example of food spoilage caused by:

A. Bacteria only.
B. Fungi.
C. Minerals.
D. Vitamins.

5. Which of the following substances is produced by certain moulds growing on improperly stored maize?

A. Calcium.
B. Aflatoxin.
C. Glucose.
D. Starch.

6. Which food preservation method involves exposing food to sunlight to remove moisture?

A. Freezing.
B. Canning.
C. Sun drying.
D. Refrigeration.

7. The main principle behind food drying is:

A. Increasing moisture content.
B. Removing moisture to inhibit microbial growth.
C. Increasing oxygen supply.
D. Increasing microbial activity.

8. Which of the following foods is commonly preserved through smoking?

A. Fresh oranges.
B. Fish.
C. Fresh milk.
D. Watermelon.

9. Salting preserves food mainly by:

A. Increasing the water available to microorganisms.
B. Reducing the water available for microbial growth.
C. Increasing food temperature.
D. Destroying all nutrients.

10. Which of the following is an example of a fermented food commonly consumed in Kenya?

A. Mursik.
B. Fresh mango.
C. Roasted maize.
D. Fresh cucumber.

11. Fermentation involves the conversion of food components by:

A. Beneficial microorganisms.
B. Insects.
C. Rodents.
D. Sunlight alone.

12. Sugar preserves fruits mainly by:

A. Increasing moisture content.
B. Reducing the water available to microorganisms.
C. Increasing oxygen supply.
D. Increasing bacterial multiplication.

13. Which of the following is an example of a traditional food preservation method?

A. Vacuum packaging.
B. Irradiation.
C. Sun drying.
D. Mechanical dehydration.

14. Refrigeration preserves food by:

A. Destroying all microorganisms.
B. Slowing down microbial growth.
C. Increasing enzyme activity.
D. Increasing moisture content.

15. The recommended temperature for long-term frozen food storage is approximately:

A. 25°C.
B. 10°C.
C. 0°C.
D. -18°C.

16. Which statement correctly describes freezing?

A. It destroys all microorganisms.
B. It prevents all chemical changes permanently.
C. It slows microbial activity and prevents multiplication while food remains frozen.
D. It increases the moisture content of food.

17. Pasteurisation is mainly used to preserve:

A. Milk.
B. Dry maize.
C. Groundnuts.
D. Raw beans.

18. Which of the following describes high-temperature short-time pasteurisation of milk?

A. 30°C for 15 minutes.
B. 72°C for 15 seconds.
C. 100°C for 30 minutes.
D. -18°C for 15 seconds.

19. What is the main purpose of canning?

A. To expose food to air.
B. To preserve food in suitable sealed containers through validated processing.
C. To increase food moisture.
D. To encourage microbial growth.

20. Which of the following foods requires particular care and validated pressure processing when canned at home?

A. High-acid fruit products.
B. Low-acid vegetables.
C. Fresh oranges.
D. Dried mangoes.

21. Vacuum packaging involves:

A. Adding more air to food packages.
B. Removing most of the air before sealing the package.
C. Exposing food to sunlight.
D. Adding sugar to food.

22. Which of the following is a modern method of food preservation?

A. Traditional sun drying.
B. Traditional smoking.
C. Mechanical dehydration.
D. Traditional grain storage.

23. Pickling commonly involves the use of:

A. Vinegar.
B. Cooking oil only.
C. Plain water only.
D. Wheat flour.

24. Which of the following is an important advantage of food preservation?

A. Increasing post-harvest losses.
B. Promoting food wastage.
C. Extending food storage life.
D. Increasing food contamination.

25. Which food is particularly vulnerable to aflatoxin contamination when improperly dried and stored?

A. Maize.
B. Fresh oranges.
C. Fresh carrots.
D. Fresh milk.

26. Which of the following is the most appropriate way to store dried beans?

A. In an open container near water.
B. In clean, dry, suitable containers.
C. In a damp sack.
D. In direct contact with the floor.

27. What does FIFO mean in food storage?

A. First In, First Out.
B. Food In, Food Out.
C. First Inspection, First Operation.
D. Food Inspection, Food Organisation.

28. Which of the following is an important food hygiene practice during preservation?

A. Using dirty equipment.
B. Handling food with unwashed hands.
C. Cleaning and sanitising equipment appropriately.
D. Storing food near chemicals.

29. Which of the following is a major contribution of food preservation to food security?

A. Reducing food availability.
B. Increasing seasonal food shortages.
C. Making food available beyond harvesting seasons.
D. Increasing post-harvest losses.

30. Which of the following is an example of value addition through food preservation?

A. Leaving mangoes to rot.
B. Processing mangoes into jam.
C. Throwing away surplus tomatoes.
D. Storing wet maize in bags.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Instructions: Answer all questions. Give clear explanations and relevant examples from the Kenyan context.

QUESTION 1: INTRODUCTION TO FOOD PRESERVATION (8 MARKS)

a) Define the term food preservation. (2 marks)

b) Explain three causes of food spoilage. (3 marks)

c) State three signs that may indicate food spoilage. (3 marks)

QUESTION 2: TRADITIONAL FOOD PRESERVATION METHODS (10 MARKS)

a) Describe the procedure of preserving maize through sun drying. (4 marks)

b) Explain three advantages of smoking as a food preservation method. (3 marks)

c) State three foods that can be preserved through fermentation. (3 marks)

QUESTION 3: MODERN FOOD PRESERVATION METHODS (8 MARKS)

a) Differentiate between refrigeration and freezing. (2 marks)

b) Explain three advantages of pasteurisation in milk preservation. (3 marks)

c) State three advantages of canning as a food preservation method. (3 marks)

QUESTION 4: PRINCIPLES AND IMPORTANCE OF FOOD PRESERVATION (8 MARKS)

a) Explain four principles of food preservation. (4 marks)

b) Describe four ways through which food preservation promotes food security in Kenya. (4 marks)

QUESTION 5: FOOD PRESERVATION, HYGIENE AND STORAGE (8 MARKS)

a) Explain four food hygiene practices that should be observed during food preservation. (4 marks)

b) State four requirements for proper storage of preserved foods. (4 marks)

QUESTION 6: PRACTICAL APPLICATION OF FOOD PRESERVATION (8 MARKS)

A farmer in Kilgoris harvests a large quantity of mangoes, tomatoes and maize during a productive season. The farmer wants to preserve the surplus produce to avoid losses and generate additional income.

a) Suggest one suitable preservation method for each of the following foods:

i. Mangoes. (1 mark)

ii. Tomatoes. (1 mark)

iii. Maize. (1 mark)

b) Explain three factors the farmer should consider when selecting the preservation methods. (3 marks)

c) State two economic benefits the farmer may obtain from preserving the surplus produce. (2 marks)

MARKING SCHEME

SUB-STRAND 1.3: FOOD PRESERVATION

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	C
3	A
4	B
5	B
6	C
7	B
8	B
9	B
10	A
11	A
12	B
13	C
14	B
15	D
16	C
17	A
18	B
19	B
20	B
21	B
22	C
23	A
24	C
25	A
26	B
27	A

28	C
29	C
30	B

Total: 30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: INTRODUCTION TO FOOD PRESERVATION (8 MARKS)

a) Define the term food preservation. (2 marks)

- Food preservation is the process of treating, handling and storing food to prevent or delay spoilage and maintain its quality, safety and nutritional value for a longer period. (2 marks)

b) Causes of food spoilage (3 marks)

Award 1 mark for each correctly explained cause. Any three.

1. Microorganisms: Bacteria, yeasts and moulds break down food substances, causing changes in colour, smell, taste and texture.

2. Enzymatic activity: Naturally occurring enzymes in foods cause chemical changes that lead to ripening, browning and eventual deterioration.

3. Insects and pests: Insects such as weevils and rodents damage stored foods and contaminate them.

4. Moisture: Excess moisture encourages the growth of microorganisms, especially moulds and bacteria.

5. Temperature: High temperatures accelerate microbial growth and chemical reactions that cause food deterioration.

6. Physical damage: Bruising, cutting and crushing expose food tissues to microorganisms and speed up spoilage.

7. Chemical reactions: Oxidation can cause rancidity in fats and oils, resulting in unpleasant smells and tastes.

c) Signs that may indicate food spoilage (3 marks)

Award 1 mark for each correct response. Any three.

1. Unpleasant or foul smell.
2. Change in the natural colour of food.
3. Growth of mould on food.
4. Unusual or sour taste.
5. Slimy or sticky texture.
6. Softening or excessive deterioration of food.
7. Swelling or bulging of food cans.
8. Production of gas or unusual bubbles in foods that should not ferment.
9. Presence of insects or larvae.
10. Leakage from food packaging.

QUESTION 2: TRADITIONAL FOOD PRESERVATION METHODS (10 MARKS)

a) Procedure of preserving maize through sun drying (4 marks)

Award 1 mark for each correctly described step. Any four in the correct sequence.

1. Harvesting: Harvest mature maize cobs when the grains have developed fully.

2. Sorting: Remove damaged, mouldy, diseased and insect-infested cobs or grains.

3. Shelling: Remove maize grains from the cobs when appropriate.

4. Spreading: Spread the maize grains in a thin layer on clean drying surfaces, tarpaulins or suitable drying racks.

5. Turning: Turn the grains regularly to ensure uniform drying.

6. Protection: Cover the maize or move it to a sheltered place during rain and at night to prevent moisture absorption and contamination.

7. Testing dryness: Ensure the grains are adequately dried before storage using an appropriate moisture test or moisture meter.

8. Packaging and storage: Store the dry maize in clean, dry, suitable bags or containers in a well-ventilated, moisture-free store.

Important: Maize should be dried thoroughly to reduce the risk of mould growth and aflatoxin contamination.

b) Advantages of smoking as a food preservation method (3 marks)

Award 1 mark for each correctly explained advantage. Any three.

1. Extends storage life: Smoking helps reduce moisture in food, making conditions less favourable for microbial growth.

2. Inhibits microorganisms: Some chemical compounds in smoke have antimicrobial properties.

3. Improves flavour: Smoking gives food a characteristic smoky flavour and aroma.

4. Improves appearance: Smoking may give food an attractive brown or golden colour.

5. Reduces food losses: It helps preserve perishable foods such as fish and meat that may otherwise spoil quickly.

6. Facilitates storage and transportation: Properly smoked foods may be stored and transported more easily than fresh products.

c) Foods that can be preserved through fermentation (3 marks)

Award 1 mark for each correct example. Any three.

1. Milk (for example, Mursik or fermented milk).
2. Yoghurt.
3. Fermented porridge.
4. Cabbage (sauerkraut).
5. Cassava.
6. Fermented millet.

7. Fermented sorghum.
8. Kimchi.
9. Fermented vegetables.

QUESTION 3: MODERN FOOD PRESERVATION METHODS (8 MARKS)

a) Difference between refrigeration and freezing (2 marks)

- Refrigeration: A food preservation method in which food is kept at low temperatures, generally between 0°C and 5°C, to slow down microbial growth and enzymatic activity without freezing the food. (1 mark)

- Freezing: A food preservation method in which food is kept at temperatures of approximately -18°C or below to freeze its water content and greatly slow microbial activity and prevent microbial multiplication while frozen. (1 mark)

b) Advantages of pasteurisation in milk preservation (3 marks)

Award 1 mark for each correctly explained advantage. Any three.

1. Destroys harmful microorganisms: Reduces disease-causing microorganisms that may be present in raw milk.

2. Extends shelf life: Reduces microbial populations responsible for milk spoilage, allowing milk to last longer under appropriate refrigeration.

3. Improves milk safety: Reduces the risk of foodborne diseases associated with contaminated raw milk.

4. Maintains nutritional quality: Preserves most of the nutritional value of milk when properly carried out.

5. Maintains quality: Helps retain the natural flavour and general quality of milk.

6. Supports safe distribution: Makes it possible to distribute milk to consumers under appropriate storage conditions.

c) Advantages of canning as a food preservation method (3 marks)

Award 1 mark for each correctly stated and explained advantage. Any three.

1. Extends shelf life: Properly processed and sealed canned foods can be stored for long periods without refrigeration while unopened.

2. Prevents contamination: Airtight sealing prevents microorganisms and other contaminants from entering the food after processing.

3. Preserves seasonal foods: Fruits and vegetables can be stored for consumption when they are out of season.

4. Facilitates transportation: Canned foods can be transported and distributed conveniently.

5. Reduces food wastage: Surplus agricultural produce can be processed and preserved instead of being discarded.

6. Provides convenience: Canned foods are readily available and require less preparation before consumption.

QUESTION 4: PRINCIPLES AND IMPORTANCE OF FOOD PRESERVATION (8 MARKS)

a) Principles of food preservation (4 marks)

Award 1 mark for each correctly explained principle. Any four.

1. Removal of moisture: Drying removes water required for microbial growth, thereby reducing food spoilage.

2. Use of low temperatures: Refrigeration and freezing slow down microbial growth and enzymatic activities.

3. Application of heat: Heating methods such as pasteurisation and properly controlled canning destroy or reduce harmful microorganisms.

4. Use of salt: Salt reduces the availability of water to microorganisms, making it difficult for them to multiply.

5. Use of sugar: High concentrations of sugar reduce water availability and inhibit the growth of many microorganisms.

6. Exclusion of air: Vacuum packaging removes most air from food packages, reducing oxidation and the growth of some microorganisms.

7. Use of acids: Vinegar and other food-grade acids lower the pH of foods, creating conditions that inhibit many harmful microorganisms.

8. Fermentation: Beneficial microorganisms produce acids or other substances that inhibit the growth of undesirable microorganisms.

9. Use of preservatives: Approved chemical preservatives help inhibit microbial growth and delay spoilage when used correctly.

10. Irradiation: Controlled exposure to ionising radiation reduces harmful microorganisms and insect infestation in certain foods.

b) Ways food preservation promotes food security in Kenya (4 marks)

Award 1 mark for each correctly explained point. Any four.

1. Reduces post-harvest losses: Prevents large quantities of harvested food from spoiling before consumption or sale.

2. Ensures year-round food availability: Preserved foods can be consumed during dry seasons and periods when fresh produce is unavailable.

3. Improves food distribution: Preserved foods can be transported to distant markets and areas experiencing food shortages.

4. Increases household food supply: Families can preserve surplus agricultural produce for consumption during future shortages.

5. Improves farmers' income: Farmers can sell preserved products at different times instead of disposing of surplus produce during peak harvesting seasons.

6. Promotes food processing industries: Encourages the establishment of small-scale and large-scale food processing enterprises.

7. Improves food diversity: Preservation makes different types of fruits, vegetables, cereals and animal products available throughout the year.

8. Reduces dependence on seasonal production: Communities can rely on stored food during periods of drought, crop failure or unfavourable weather.

QUESTION 5: FOOD PRESERVATION, HYGIENE AND STORAGE (8 MARKS)

a) Food hygiene practices during food preservation (4 marks)

Award 1 mark for each correctly explained practice. Any four.

1. Washing hands: Wash hands thoroughly with soap and safe running water before handling food.

2. Cleaning equipment: Clean and sanitise containers, knives, drying racks and other equipment before and after use.

3. Sorting food: Remove rotten, mouldy, damaged and contaminated food before preservation.

4. Using safe water: Use clean and safe water when washing food and preparing products for preservation.

5. Protecting food from pests: Cover food during drying and processing to prevent contamination by flies, rodents and other pests.

6. Maintaining personal hygiene: Wear clean clothing and cover wounds when handling food.

7. Proper handling: Avoid placing food on dirty surfaces or handling ready-to-eat food with unwashed hands.

8. Using suitable packaging: Use clean, food-grade packaging materials to prevent contamination.

9. Separating chemicals: Keep detergents, pesticides and other chemicals away from food and food-processing areas.

10. Proper disposal of waste: Dispose of spoiled food and other waste materials safely to maintain a clean working environment.

b) Requirements for proper storage of preserved foods (4 marks)

Award 1 mark for each correctly stated requirement. Any four.

1. The storage area should be clean and free from pests and rodents.
2. The storage area should be dry to prevent moisture absorption and mould growth.
3. Food should be stored in clean, dry and suitable containers.
4. Food should be protected from direct sunlight and excessive heat.
5. The storage area should have adequate ventilation where appropriate.
6. Food should be stored at the recommended temperature.
7. Food containers should be properly sealed to prevent contamination.
8. Preserved foods should be labelled with the product name and date of preservation.
9. Different food products should be stored separately to prevent cross-contamination.
10. The FIFO (First In, First Out) system should be applied when issuing stored foods.
11. Foods should be stored away from chemicals and other harmful substances.
12. Damaged or leaking packages should be inspected and handled appropriately.

QUESTION 6: PRACTICAL APPLICATION OF FOOD PRESERVATION (8 MARKS)

a) Suitable preservation methods (3 marks)

Award 1 mark for each correct response.

i. Mangoes (1 mark)

Accept any one:

- Sun drying or dehydration to produce dried mangoes.
- Processing into mango jam.
- Making mango juice or pulp followed by appropriate heat treatment and packaging.
- Freezing mango pulp.

ii. Tomatoes (1 mark)

Accept any one:

- Sun drying or mechanical dehydration.
- Processing into tomato paste.
- Processing into tomato sauce.
- Canning using an appropriate validated processing method.
- Freezing tomato pulp.

iii. Maize (1 mark)

Accept any one:

- Sun drying.
- Mechanical drying.
- Properly controlled storage of thoroughly dried grains in suitable airtight or hermetic containers.
- Processing into flour followed by appropriate packaging and storage.

b) Factors to consider when selecting preservation methods (3 marks)

Award 1 mark for each correctly explained factor. Any three.

1. Nature of the food: The method should be suitable for the type of produce being preserved. For example, maize can be dried, while mangoes can be processed into jam or dried slices.

2. Cost of preservation: The farmer should select a method that is affordable in terms of equipment, labour, packaging and energy requirements.

3. Availability of equipment: The farmer should consider whether the required equipment, such as dryers, freezers or processing machines, is available.

4. Storage facilities: The availability of suitable storage conditions should influence the choice of preservation method.

5. Market demand: The farmer should select methods that produce products demanded by consumers.

6. Expected storage period: The method should provide the required length of storage depending on when the produce will be consumed or sold.

7. Quantity of produce: The method should be appropriate for the amount of surplus produce available.

8. Nutritional quality: The selected method should retain as much nutritional value as possible.

9. Food safety: The method should ensure that the preserved food is safe for human consumption.

10. Availability of raw materials: Ingredients such as sugar, vinegar, salt and packaging materials should be readily available.

11. Skills and expertise: The farmer should consider whether they have the knowledge and skills required to carry out the preservation process correctly.

c) Economic benefits of preserving surplus produce (2 marks)

Award 1 mark for each correctly stated benefit. Any two.

1. Increases income: The farmer can sell preserved products such as dried mangoes, tomato paste and flour to generate additional income.

2. Reduces financial losses: Prevents harvested produce from rotting and becoming unsellable.

3. Creates employment: Food processing activities can create jobs for family members and other community members.

4. Adds value to agricultural produce: Processing raw produce into finished products can increase its market value.

5. Extends the selling period: Preserved products can be sold beyond the harvesting season when fresh produce may be scarce.

6. Promotes business development: Encourages the establishment of small-scale food processing enterprises.

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.4: CAKE MAKING AND DECORATION







Introduction

Cake making is an important food preparation skill in Home Science. It involves selecting and measuring ingredients, preparing equipment, mixing ingredients, baking the mixture and decorating the finished product.

Cakes are prepared for different purposes, including:

- Everyday family consumption.

- Birthdays, weddings, anniversaries and other celebrations.
- School events, parties and social gatherings.
- Commercial sale in bakeries, hotels, supermarkets and restaurants.
- Hospitality and catering services.

Cake making develops practical skills such as measuring, mixing, baking, creativity, time management, hygiene, teamwork and entrepreneurship.

In Kenya, cakes are commonly prepared using locally available ingredients such as wheat flour, eggs, sugar, milk, margarine, cooking oil and fruits. Cake making also provides opportunities for self-employment and income generation.

Specific Learning Outcomes

By the end of this sub-strand, the learner should be able to:

1. Explain requirements used in cake making and decoration.
2. Describe raising agents used in cake making.
3. Make cakes using different methods.
4. Decorate cakes using different techniques.
5. Examine common faults in cake making and decoration.
6. Embrace cake making and decoration using different methods.

1.4.1 REQUIREMENTS USED IN CAKE MAKING AND DECORATION

Cake making requires suitable ingredients, tools, equipment, a clean working environment and appropriate skills.

A. Ingredients used in cake making

Ingredients are the food substances combined to make a cake. Each ingredient has a specific function in determining the cake's texture, flavour, colour, structure and appearance.



1. Wheat flour

Wheat flour is the main dry ingredient used in most cakes. It provides the structure and framework of the cake.

Functions of wheat flour:

- Provides the bulk of the cake mixture.
- Contains starch, which helps form the cake structure during baking.
- Contains proteins that form gluten when mixed with liquid.
- Helps hold other ingredients together.
- Contributes to the texture and shape of the cake.

Types of flour used in cake making:

- **Soft wheat flour:** Contains relatively low protein and produces tender cakes.
- **Cake flour:** Finely milled flour with low protein content, suitable for light cakes.
- **Self-raising flour:** Contains flour and an added raising agent, usually baking powder.
- **Plain flour:** Does not contain an added raising agent; baking powder may be added according to the recipe.

Important considerations when selecting flour:

- It should be fresh and free from insects.
- It should be dry and free from unpleasant smells.
- It should be properly stored in a clean, dry container.
- It should be sifted to remove lumps and incorporate air.

2. Sugar

Sugar is a sweetening ingredient commonly used in cake making.

Functions of sugar:

- Sweetens the cake.
- Improves flavour.
- Helps produce a golden-brown crust through caramelisation and browning reactions.
- Helps retain moisture, keeping cakes softer.
- During creaming, sugar crystals help trap air in the fat.
- Contributes to the tenderness of the finished cake.

Types of sugar used in cake making:

- Granulated sugar.
- Caster sugar.
- Brown sugar.
- Icing sugar.

- Demerara sugar.

Examples of their uses:

- Caster sugar is suitable for sponge and butter cakes because it dissolves relatively easily.
- Brown sugar adds a deeper flavour and colour.
- Icing sugar is commonly used in buttercream and other cake decorations.

3. Fat

Fat is an important ingredient that improves the texture, flavour and keeping quality of cakes.

Examples include:

- Butter.
- Margarine.
- Baking fat.
- Vegetable shortening.
- Vegetable oil.

Functions of fat:

- Adds flavour and richness.
- Makes cakes tender by limiting excessive gluten development.
- Helps trap air during the creaming method.
- Improves the texture of the cake.
- Helps prevent cakes from becoming dry too quickly.
- Contributes to the soft mouthfeel of the cake.

Important considerations:

- Fat should be fresh and free from rancid smells.
- Butter or margarine should be softened appropriately for creaming.
- Melted fat should be allowed to cool slightly before being incorporated where the recipe requires it.
- The quantity of fat should be measured accurately.

4. Eggs

Eggs are important ingredients in many cake recipes.



Functions of eggs:

- Provide structure through protein coagulation during baking.
- Trap air when beaten, helping cakes rise.
- Bind the ingredients together.
- Add moisture to the mixture.
- Improve the colour and flavour of cakes.
- Add nutritional value through proteins, fats, vitamins and minerals.
- Egg yolks contain emulsifying substances that help combine fat and water.

Parts of an egg and their uses:

- **Egg white:** Can be whisked to incorporate air, producing foam that helps cakes rise.
- **Egg yolk:** Provides fat, colour, flavour and emulsifying properties.
- **Whole egg:** Contributes moisture, structure, colour and richness.

Selection and handling of eggs:

- Use fresh eggs with clean, uncracked shells.
- Store eggs appropriately according to food safety guidance.
- Avoid using eggs with unpleasant smells.
- Break eggs separately into a small bowl before adding them to the main mixture to detect spoiled eggs.
- Wash hands after handling raw eggs.

5. Raising agents

Raising agents are substances or methods that help cakes increase in volume by producing or incorporating gases, mainly carbon dioxide and air.

They make cakes light, soft and porous.

Examples include:

- Baking powder.
- Baking soda.
- Air incorporated during whisking or creaming.
- Steam produced from moisture in the mixture.
- Yeast in selected cake-like products.

Raising agents are discussed in detail in section 1.4.2.

6. Milk and other liquids

Liquids are used to moisten the dry ingredients and help form a suitable cake mixture.

Examples include:

- Fresh milk.
- Water.

- Buttermilk.
- Yoghurt.
- Fruit juice.

Functions of liquids:

- Moisten the flour and other dry ingredients.
- Help dissolve sugar and other soluble ingredients.
- Help distribute ingredients evenly.
- Assist in gluten development.
- Produce steam during baking, contributing to expansion.
- Improve the flavour and nutritional value of the cake.

7. Flavouring agents

Flavouring agents improve the taste and aroma of cakes.

Examples include:

- Vanilla essence.
- Lemon zest.
- Orange zest.
- Cinnamon.
- Nutmeg.
- Cocoa powder.
- Coffee.
- Almond flavouring.

Functions:

- Improve the taste of cakes.
- Give cakes a pleasant aroma.
- Create variety in cake products.
- Mask undesirable flavours from some ingredients.

8. Salt

Salt is used in small quantities in cake making.

Functions:

- Enhances the flavour of the cake.
- Balances sweetness.
- Improves the overall taste.
- Helps bring out other flavours.

9. Fruits and other additions

Fruits and other ingredients may be added to cakes to improve flavour, texture, colour and nutritional value.

Examples include:

- Raisins.
- Sultanas.
- Chopped dates.
- Bananas.
- Grated carrots.
- Pineapple pieces.
- Desiccated coconut.
- Chopped nuts.
- Chocolate chips.

Functions:

- Add flavour and variety.
- Improve the appearance of cakes.
- Add nutrients such as fibre, vitamins and minerals.
- Provide different textures.
- Make cakes attractive to consumers.

B. Tools and equipment used in cake making

Cake making requires appropriate tools and equipment for measuring, mixing, preparing, baking, cooling and decorating.







1. Measuring equipment

Equipment	Uses
Weighing scale	Measures ingredients accurately by weight.
Measuring cups	Measure dry and liquid ingredients.
Measuring spoons	Measure small quantities such as baking powder, salt and flavouring.
Measuring jug	Measures liquids such as milk and water.

Importance of accurate measurement:

- Ensures consistent results.
- Prevents incorrect proportions.
- Helps achieve the desired texture.
- Reduces wastage of ingredients.
- Makes it easier to repeat a successful recipe.

2. Mixing equipment

Equipment	Uses
Mixing bowls	Hold ingredients during mixing.
Wooden spoon	Mixes and combines ingredients.
Balloon whisk	Beats eggs and incorporates air.
Electric mixer	Beats and creams ingredients quickly.
Rubber spatula	Scrapes mixture from the sides of bowls.
Metal spoon	Folds ingredients into a mixture.

3. Preparation equipment

Equipment	Uses
Sieve	Removes lumps and aerates flour.
Flour sifter	Distributes flour evenly.

Palette knife	Spreads icing smoothly.
Cake scraper	Smooths the sides of decorated cakes.
Pastry brush	Applies grease to baking tins.
Chopping board	Provides a clean surface for cutting fruits and other additions.
Kitchen knife	Cuts fruits and other ingredients.

4. Baking equipment



Equipment	**Uses**
Baking oven	Bakes cakes using controlled heat.
Cake tins	Hold the cake mixture during baking.
Baking trays	Hold shallow cakes, cupcakes or other baked products.
Oven thermometer	Checks the oven temperature.
Cooling rack	Allows cakes to cool evenly.
Oven gloves	Protect hands from hot equipment.

Types of cake tins:

- Round cake tins.
- Square cake tins.
- Rectangular cake tins.
- Loaf tins.
- Bundt tins.
- Cupcake and muffin tins.
- Springform tins.

5. Cake decoration equipment



Equipment	Uses
Piping bag	Holds icing for decorating cakes.
Piping nozzles	Produce different icing patterns.
Cake turntable	Rotates the cake during decoration.
Palette knife	Spreads icing on the cake.
Cake scraper	Smooths icing on the sides.
Cake leveller	Cuts the top of a cake evenly.
Fondant smoother	Smooths fondant covering.

Pastry brush	Applies syrup or other suitable coatings.
Food colouring	Adds colour to icing and decorations.
Cake stencils	Produce patterns and designs.

C. Preparation of the working environment

The working environment should be clean, organised and safe.

Requirements include:

1. Clean working surfaces before and after use.
2. Ensure adequate lighting and ventilation.
3. Provide clean water for washing hands and equipment.
4. Arrange ingredients and equipment within easy reach.
5. Keep food away from chemicals and cleaning agents.
6. Ensure that the oven is in good working condition.
7. Keep children and unauthorised persons away from hot equipment.
8. Provide a suitable place for cooling and storing cakes.

D. Personal hygiene and safety during cake making

Personal hygiene:

- Wash hands thoroughly with soap and clean water before handling food.
- Wear a clean apron.
- Tie back long hair or cover it appropriately.
- Keep fingernails short and clean.
- Avoid handling food when suffering from a contagious illness.
- Cover cuts and wounds using waterproof dressings.
- Avoid coughing or sneezing over food.
- Do not taste food using the same spoon repeatedly.

Kitchen safety:

- Use oven gloves when handling hot baking tins.
- Keep electrical appliances away from water.
- Switch off appliances after use.
- Use knives carefully.
- Avoid overloading electrical sockets.
- Do not touch hot oven surfaces with bare hands.
- Keep the floor dry to prevent slipping.
- Follow the manufacturer's instructions when using equipment.

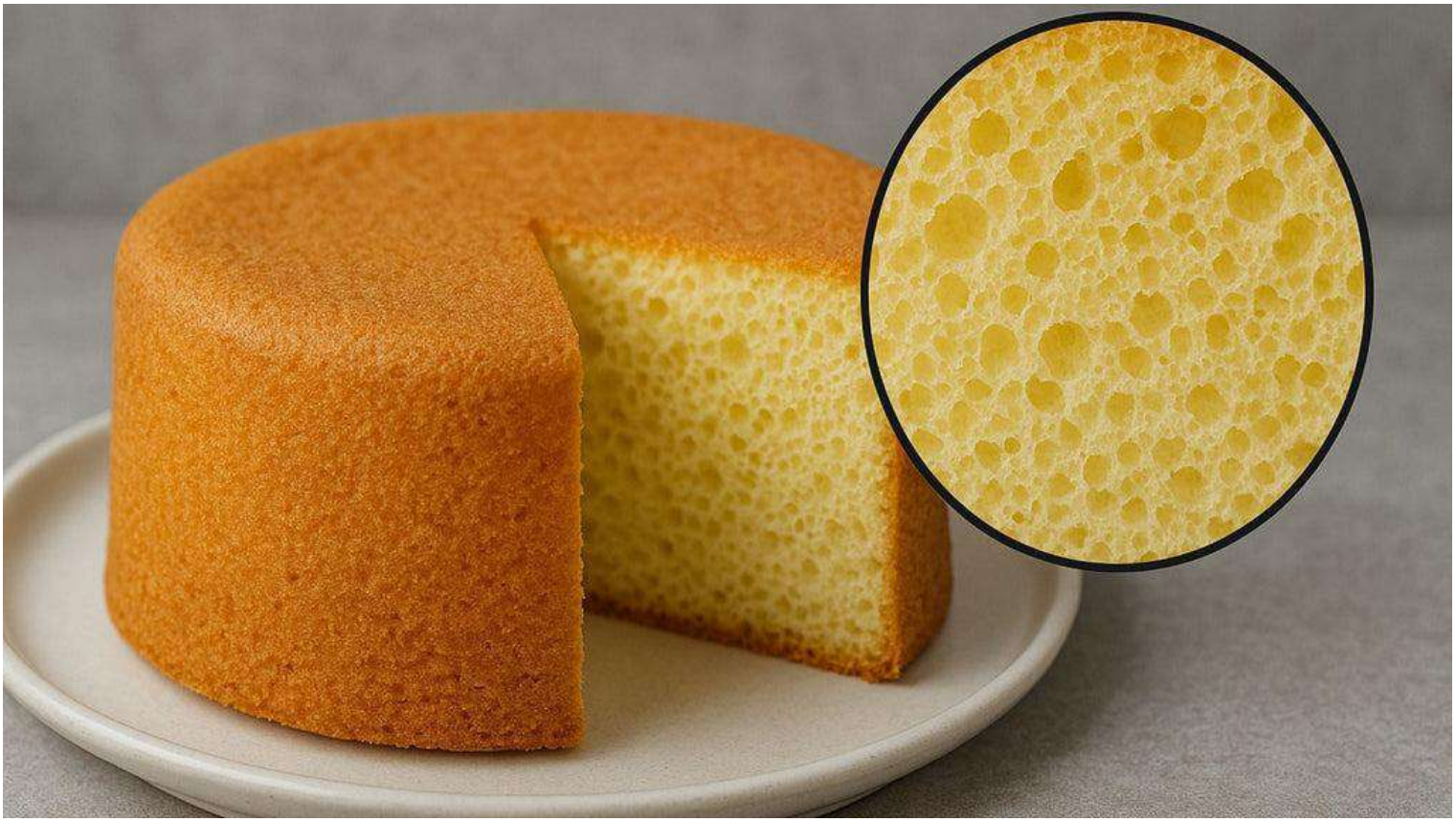
1.4.2 RAISING AGENTS USED IN CAKE MAKING

Meaning of raising agents

Raising agents are substances or methods used to increase the volume of a cake mixture by introducing or producing gases that expand during baking.

They make cakes light, soft, porous and tender.

During baking, the trapped air and gases expand. The heat also causes the cake structure to set, helping it retain its increased volume.



Importance of raising agents in cake making

- Increase the volume of cakes.
- Produce a light and soft texture.
- Create small air spaces within the cake.
- Improve the appearance of the cake.
- Make cakes easier to chew and digest.
- Prevent cakes from being excessively dense.
- Help produce the desired height and shape.
- Improve the eating quality of cakes.

Types of raising agents

Raising agents used in cake making can be classified into three main groups:

1. Chemical raising agents.
2. Mechanical raising agents.

3. Physical raising agents.

A. Chemical raising agents

Chemical raising agents are substances that produce gases through chemical reactions when mixed with suitable ingredients or exposed to moisture and heat.

The main gas produced by common chemical raising agents is carbon dioxide.

1. Baking powder

Baking powder is a mixture of sodium bicarbonate, one or more edible acidic substances and a starch that helps keep the mixture dry and free-flowing.

How baking powder works:

- When baking powder is mixed with liquid, the acidic and alkaline components react.
- The reaction produces carbon dioxide gas.
- The gas forms bubbles in the cake mixture.
- During baking, the gas bubbles expand due to heat.
- The mixture rises and becomes porous.
- The cake structure sets as the proteins coagulate and starch gelatinises.

Uses of baking powder:

- Sponge cakes.
- Butter cakes.
- Cupcakes.
- Some quick breads.
- Muffins.

Precautions when using baking powder:

- Measure the required quantity accurately.
- Avoid using expired baking powder.
- Store it in a tightly closed, dry container.
- Sift it together with flour to distribute it evenly.
- Avoid adding excessive quantities because this may affect flavour and texture.

2. Baking soda

Baking soda is also known as sodium bicarbonate.

It is an alkaline chemical raising agent that requires an acidic ingredient to produce carbon dioxide effectively.

Examples of acidic ingredients used with baking soda:

- Buttermilk.
- Yoghurt.
- Lemon juice.

- Vinegar.
- Natural acidic components in some cocoa powders.

How baking soda works:

- It reacts with an acid in the mixture.
- The reaction produces carbon dioxide gas.
- The gas forms bubbles in the cake mixture.
- The bubbles expand during baking.
- The cake rises and develops a lighter texture.

Uses:

- Chocolate cakes containing suitable acidic ingredients.
- Banana cakes.
- Ginger cakes.
- Cakes made with buttermilk or yoghurt.

Precautions:

- It should be measured accurately.
- It should be used with an appropriate acidic ingredient.
- Excessive baking soda may give the cake a bitter or soapy taste.
- The mixture should be baked promptly after mixing when the recipe relies on its immediate reaction.

Difference between baking powder and baking soda

Baking powder	**Baking soda**
Contains sodium bicarbonate and acidic components.	Contains sodium bicarbonate only.
Usually contains a starch stabiliser.	Does not normally contain a starch stabiliser.
Can provide its own acidic component.	Requires an acidic ingredient in the recipe.
Commonly used in many cake recipes.	Used in recipes containing suitable acidic ingredients.

B. Mechanical raising agents

Mechanical raising agents involve incorporating air into the cake mixture through physical action.

Air is trapped in the mixture and expands when heated during baking.

Examples include:

- Creaming.

- Whisking.
- Beating.
- Folding.

1. Creaming

Creaming is the process of beating fat and sugar together until the mixture becomes light, pale and fluffy.



How creaming works:

- Fat is softened to a suitable consistency.
- Sugar is added to the fat.
- The mixture is beaten using a wooden spoon or electric mixer.
- Sugar crystals help trap tiny air bubbles within the fat.
- The trapped air expands during baking.
- The cake rises and develops a light texture.

Cakes commonly made using creaming:

- Butter cakes.
- Madeira cakes.
- Some fruit cakes.
- Cupcakes.

2. Whisking

Whisking is the process of beating eggs or egg whites rapidly to incorporate air.



How whisking works:

- Air is incorporated into the egg mixture during beating.
- Egg proteins help stabilise the air bubbles.
- The mixture becomes thicker, lighter and increases in volume.
- During baking, the trapped air expands.
- The cake rises and develops a light, spongy texture.

Cakes commonly made using whisking:

- Fatless sponge cakes.
- Swiss rolls.
- Some foam cakes.

Important points when whisking:

- Use clean, dry equipment.
- Avoid contamination of egg whites with fat or egg yolk when whipping whites separately.
- Whisk until the required volume and consistency are achieved.
- Fold flour gently into the mixture to avoid losing incorporated air.

3. Beating

Beating involves mixing ingredients vigorously to incorporate air and distribute the ingredients evenly.

Uses:

- Beating eggs and sugar.
- Beating cake mixtures.
- Combining ingredients during cake preparation.

Importance:

- Incorporates air.
- Produces a uniform mixture.
- Helps improve cake texture.
- Prevents uneven distribution of ingredients.

4. Folding

Folding is a gentle method of combining light mixtures with heavier ingredients without losing too much incorporated air.

Procedure:

1. Add the sifted flour gradually to the whisked egg mixture.
2. Use a metal spoon or spatula.
3. Cut down through the centre of the mixture.
4. Move the spoon across the bottom of the bowl.
5. Bring the mixture over the top.
6. Turn the bowl and repeat until combined.

Importance of folding:

- Retains trapped air.
- Prevents the mixture from becoming heavy.
- Produces light and soft cakes.

- Helps maintain the volume of whisked mixtures.

C. Physical raising agents

Physical raising occurs when gases already present in the mixture or vapour produced during baking expand due to heat.

1. Air

Air incorporated through creaming, whisking and beating expands when heated.

Importance:

- Increases the volume of the cake.
- Produces a light texture.
- Creates small spaces within the cake.

2. Steam

Steam is produced when water and other moisture in the cake mixture are heated.

How steam raises cakes:

- Heat changes water into water vapour.
- The vapour expands.
- It contributes to the expansion of air cells in the mixture.
- The cake increases in volume.
- The structure sets during baking.

Importance of steam:

- Contributes to cake expansion.
- Helps produce a soft texture.
- Supports the action of other raising agents.

3. Carbon dioxide already present in the mixture

Carbon dioxide may be produced by chemical reactions or fermentation and becomes part of the mixture before and during baking.

It expands when heated, helping the cake rise.

D. Biological raising agents

Biological raising agents are living microorganisms, mainly yeast, which produce carbon dioxide through fermentation.

Yeast is not commonly used in ordinary sponge and butter cakes, but it may be used in certain yeast-raised cakes and enriched baked products.

How yeast works:

1. Yeast uses fermentable sugars in the mixture.
2. It produces carbon dioxide and other fermentation products.
3. Carbon dioxide becomes trapped in the mixture.

4. The gas expands during baking.
5. The product develops a raised structure.

Summary of raising agents

Type	Examples	How they work
Chemical	Baking powder, baking soda	Produce carbon dioxide through chemical reactions.
Mechanical	Creaming, whisking, beating	Incorporate air into the mixture.
Physical	Air and steam	Expand when heated.
Biological	Yeast	Produces carbon dioxide through fermentation.

1.4.3 METHODS OF CAKE MAKING

Cake making involves different mixing methods. The method selected depends on the type of cake, ingredients, desired texture and recipe.

The main methods are:

1. Creaming method.
2. Rubbing-in method.
3. Whisking method.
4. Melting method.

A. Creaming method

The creaming method involves beating fat and sugar together until light and fluffy before adding eggs and the remaining ingredients.







Ingredients commonly used

- Wheat flour.
- Butter or margarine.
- Sugar.
- Eggs.
- Baking powder, where required.
- Milk.
- Flavouring agents.

Procedure

1. **Prepare the equipment:** Clean the working surface and assemble the required equipment.
2. **Prepare the cake tin:** Grease the tin and line it with baking paper where necessary.
3. **Measure ingredients:** Weigh all ingredients accurately.
4. **Sift flour:** Sift the flour together with the raising agent if required.
5. **Cream fat and sugar:** Beat the softened fat and sugar until light and fluffy.
6. **Add eggs:** Add eggs gradually, beating after each addition.
7. **Add flavouring:** Add vanilla essence or other flavouring.
8. **Add flour:** Fold in the sifted flour gently.
9. **Add liquid:** Add milk gradually where required to obtain the correct consistency.
10. **Transfer mixture:** Place the mixture into the prepared cake tin.
11. **Bake:** Bake in a preheated oven at the temperature and time recommended by the recipe.
12. **Test doneness:** Insert a clean skewer into the centre. It should come out clean or with a few dry crumbs.
13. **Cool:** Allow the cake to rest briefly before removing it from the tin. Cool completely on a wire rack.

Advantages of the creaming method

- Produces light and tender cakes.
- Incorporates air into the mixture.
- Produces a fine and even texture.
- Suitable for many butter cakes.
- Allows the use of different flavourings and additions.

Disadvantages

- Requires careful beating.
- May take more time than some other methods.
- Fat must be at a suitable temperature.
- Overbeating after adding flour may produce a tough cake.

Examples of cakes made using the creaming method

- Vanilla butter cake.
- Madeira cake.
- Fruit cake.
- Cupcakes.

B. Rubbing-in method

The rubbing-in method involves rubbing fat into flour using the fingertips until the mixture resembles fine breadcrumbs before adding sugar, eggs or liquid.



Ingredients commonly used

- Wheat flour.
- Margarine or butter.
- Sugar.
- Eggs.
- Baking powder where required.
- Milk or other liquid.

- Flavouring.

Procedure

1. Assemble and clean the required equipment.
2. Grease and line the baking tin.
3. Measure all ingredients accurately.
4. Sift flour and raising agent into a mixing bowl.
5. Cut the fat into small pieces.
6. Add the fat to the flour.
7. Rub the fat into the flour using the fingertips.
8. Continue until the mixture resembles fine breadcrumbs.
9. Add sugar and other dry ingredients.
10. Beat the eggs separately where necessary.
11. Add eggs and liquid gradually.
12. Mix gently until a suitable cake mixture is formed.
13. Transfer the mixture into the prepared tin.
14. Bake in a preheated oven according to the recipe.
15. Test for doneness.
16. Cool the cake on a wire rack.

Advantages

- Simple and requires limited equipment.
- Allows even distribution of fat.
- Can produce a tender texture.
- Suitable for certain simple cakes and cake-like products.

Disadvantages

- Requires care to avoid melting the fat through excessive handling.
- May not incorporate as much air as the creaming method.
- Incorrect mixing may produce a heavy product.

Examples

- Some tea cakes.
- Certain fruit cakes.
- Selected simple cakes prepared using recipes based on rubbing-in.

Important: The rubbing-in method is also widely used in pastry and scone preparation. It should not be confused with the creaming method.

C. Whisking method

The whisking method involves beating eggs and sugar until thick, pale and increased in volume before gently folding in flour.





Ingredients commonly used

- Eggs.
- Sugar.
- Wheat flour.
- Flavouring agents.

Some recipes may include a small amount of liquid or other ingredients.

Procedure

1. Clean and assemble all equipment.
2. Grease and line the cake tin if required by the recipe.
3. Measure the ingredients accurately.
4. Break eggs into a clean mixing bowl.
5. Add sugar.
6. Whisk the eggs and sugar until thick, pale and increased in volume.

7. Lift the whisk and observe whether the mixture falls in a ribbon-like trail.
8. Sift flour.
9. Fold flour gently into the egg mixture using a metal spoon or spatula.
10. Add flavouring where required.
11. Transfer the mixture carefully into the prepared tin.
12. Bake immediately in a preheated oven.
13. Avoid opening the oven door unnecessarily during the early stages of baking.
14. Test whether the cake is ready.
15. Cool carefully before removing it from the tin.

Advantages

- Produces light and airy cakes.
- Requires little or no added fat in traditional fatless sponge recipes.
- Gives a soft, fine texture.
- Suitable for sponge cakes and Swiss rolls.

Disadvantages

- Requires effective whisking.
- The mixture can lose air if handled roughly.
- Folding flour carelessly can make the cake heavy.
- Requires careful baking to prevent collapse.

Examples

- Fatless sponge cake.
- Swiss roll.
- Some foam cakes.

D. Melting method

The melting method involves melting fat and sugar, sometimes together with syrup or other ingredients, before combining them with the dry ingredients.



Ingredients commonly used

- Wheat flour.
- Butter or margarine.
- Sugar.
- Syrup or honey where required.
- Eggs.
- Milk or water.
- Spices.
- Baking powder or baking soda, depending on the recipe.

Procedure

1. Assemble the required equipment.
2. Prepare and line the baking tin.
3. Measure the ingredients accurately.
4. Place the fat and sugar in a saucepan.
5. Add syrup or other ingredients where required.
6. Heat gently until the fat melts and the ingredients are combined.
7. Remove from heat.
8. Allow the mixture to cool slightly.
9. Sift flour and raising agent into a mixing bowl.
10. Add the cooled melted mixture to the dry ingredients.
11. Add eggs and other liquids according to the recipe.
12. Mix until evenly combined.
13. Transfer the mixture into the prepared tin.
14. Bake in a preheated oven according to the recipe.
15. Test for doneness.
16. Cool before decorating or serving.

Advantages

- Easy to prepare.
- Requires limited beating.
- Suitable for certain moist and dense cakes.
- Allows the use of syrup, honey and spices.
- Useful for recipes that do not depend on creaming air into fat.

Disadvantages

- May produce a denser cake than the whisking method.
- Excessive heating can damage the flavour of ingredients.
- Hot melted ingredients may cook eggs if added without cooling.
- Incorrect proportions can make the cake greasy or heavy.

Examples

- Ginger cake.
- Some honey cakes.
- Certain syrup cakes.
- Selected moist fruit cakes.

Comparison of cake-making methods

Method	Main action	Air incorporation	Common examples
Creaming	Beat fat and sugar	Air trapped in fat	Butter cake, Madeira cake
Rubbing-in	Rub fat into flour	Limited air incorporation	Selected tea cakes
Whisking	Beat eggs and sugar	Air trapped in egg foam	Fatless sponge, Swiss roll
Melting	Melt fat and sugar	Mainly through raising agents and steam	Ginger cake, syrup cake

1.4.4 BAKING OF CAKES

Baking is the process of cooking a cake mixture using controlled dry heat in an oven.

Changes that take place during baking

1. **Expansion of gases:** Air, carbon dioxide and steam expand, increasing the cake's volume.
2. **Coagulation of proteins:** Egg and flour proteins help the cake structure set.
3. **Gelatinisation of starch:** Starch absorbs moisture and swells, contributing to the structure.
4. **Crust formation:** The surface becomes firmer and develops a crust.
5. **Browning:** The surface develops colour through browning reactions.
6. **Moisture loss:** Some water evaporates from the cake.
7. **Development of flavour:** Heat produces characteristic baked aromas and flavours.
8. **Setting of the structure:** The cake becomes firm enough to retain its shape after cooling.

Factors to consider when baking cakes

- Correct oven temperature.
- Appropriate baking time.
- Correct positioning of the cake tin.
- Suitable cake tin size.
- Accurate ingredient measurement.
- Proper mixing method.
- Appropriate preheating of the oven.
- Avoiding unnecessary opening of the oven door.
- Testing the cake before removing it.

How to test whether a cake is ready

- Insert a clean skewer into the centre; it should come out clean or with a few dry crumbs.
- The cake should be firm to a gentle touch.
- The edges may begin to pull slightly away from the tin.
- The cake should have a suitable golden-brown colour, depending on the recipe.
- The cake should spring back gently when lightly pressed.

Cooling of cakes

Cooling is the process of allowing a baked cake to lose heat before storage, serving or decoration.

Procedure:

1. Remove the cake from the oven carefully.
2. Place the tin on a heat-resistant surface.
3. Allow it to rest briefly.
4. Remove the cake from the tin where appropriate.
5. Transfer it to a cooling rack.
6. Allow it to cool completely before applying most types of icing.

Importance of cooling:

- Prevents condensation from making the cake wet.
- Prevents icing from melting.
- Makes slicing easier.
- Allows the cake structure to stabilise.
- Reduces the risk of damaging the cake during decoration.

1.4.5 CAKE DECORATION

Meaning of cake decoration

Cake decoration is the process of improving the appearance of a baked cake by applying icing, toppings, colours, patterns and other edible decorative materials.







Importance of cake decoration

- Improves the appearance of cakes.
- Makes cakes attractive to consumers.
- Adds flavour and texture.

- Makes cakes suitable for celebrations and special occasions.
- Allows personal creativity and artistic expression.
- Increases the commercial value of cakes.
- Helps communicate a message or theme.
- Creates opportunities for entrepreneurship and employment.

Requirements for cake decoration

A. Ingredients used in cake decoration

1. Icing sugar

Icing sugar is finely ground sugar used to prepare different types of icing.

Uses:

- Preparing buttercream.
- Preparing glace icing.
- Preparing some royal icing recipes.
- Dusting cakes.
- Making decorative finishes.

2. Butter or margarine

Uses:

- Provides the fat component in buttercream.
- Improves flavour.
- Gives icing a smooth texture.
- Helps icing hold its shape when properly prepared.

3. Egg whites

Egg whites are used in some traditional royal icing recipes.

Uses:

- Help form a firm icing.
- Support piping and decorative work.
- Produce a hard finish after drying.

Where raw egg whites are used, appropriate food safety precautions and suitable pasteurised egg products should be considered.

4. Water or milk

Uses:

- Adjusts the consistency of icing.
- Helps dissolve icing sugar.
- Makes glace icing spreadable.

- Helps combine some decoration ingredients.

5. Food colouring

Food colouring is used to produce different colours in icing and decorations.

Examples include:

- Red.
- Blue.
- Green.
- Yellow.
- Purple.
- Pink.
- Orange.

Precautions:

- Use food-grade colouring.
- Follow recommended quantities.
- Avoid excessive colouring.
- Store colouring agents properly.

6. Fondant

Fondant is a soft, pliable sugar paste used to cover cakes and create decorative shapes.

Uses:

- Covering cakes smoothly.
- Making flowers.
- Making ribbons and bows.
- Creating letters and numbers.
- Producing decorative figures.

7. Cream

Whipped cream is used to cover and decorate cakes.

Uses:

- Producing soft finishes.
- Piping patterns.
- Making rosettes.
- Decorating cupcakes.
- Filling cake layers.

Cream-based decorations should be refrigerated and handled safely because they are perishable.

8. Sprinkles and edible decorations

Examples include:

- Sugar sprinkles.
- Edible pearls.
- Chocolate chips.
- Coconut flakes.
- Edible glitter.
- Crushed biscuits.
- Chopped nuts.
- Fresh fruits.

Uses:

- Add colour and texture.
- Create attractive patterns.
- Improve flavour.
- Provide different decorative finishes.

B. Types of icing used in cake decoration

1. Buttercream icing

Buttercream is an icing made mainly from butter or margarine and icing sugar, with flavouring and small quantities of liquid added as required.



Ingredients:

- Butter or margarine.

- Icing sugar.
- Vanilla essence or other flavouring.
- Small quantities of milk or water where required.
- Food colouring where desired.

Preparation procedure:

1. Ensure that the butter or margarine is at a suitable soft consistency.
2. Place it in a clean mixing bowl.
3. Beat until smooth and creamy.
4. Sift icing sugar.
5. Add icing sugar gradually while beating.
6. Add flavouring.
7. Add a little milk or water if necessary.
8. Beat until light and smooth.
9. Add food colouring where required.
10. Use immediately or store appropriately.

Uses of buttercream:

- Covering cakes.
- Filling cake layers.
- Piping rosettes.
- Creating borders.
- Making decorative patterns.
- Decorating cupcakes.

Advantages:

- Easy to prepare.
- Has a pleasant taste.
- Can be coloured easily.
- Suitable for different piping techniques.
- Uses ingredients commonly available in Kenya.

Disadvantages:

- May soften in hot conditions.
- Can melt or lose its shape when exposed to excessive heat.
- Requires appropriate storage.
- May become greasy if poorly prepared.

2. Royal icing

Royal icing is a firm icing traditionally prepared using icing sugar and egg white or a suitable pasteurised egg-white product.



Ingredients:

- Icing sugar.
- Egg white or suitable pasteurised egg-white product.
- Lemon juice or another suitable ingredient where required.

Preparation procedure:

1. Sift icing sugar into a clean bowl.
2. Prepare the egg white safely.
3. Add the egg white to the icing sugar gradually.
4. Beat until the mixture becomes smooth and thick.
5. Adjust the consistency according to the intended use.
6. Cover the icing when not in use to prevent drying.
7. Transfer into a piping bag for decoration.

Uses:

- Piping flowers.
- Creating fine decorative patterns.
- Writing messages on cakes.
- Producing lace-like designs.
- Making decorative borders.

Advantages:

- Dries to a firm finish.
- Suitable for detailed decorations.
- Holds piped patterns when correctly prepared.
- Can be used for intricate designs.

Disadvantages:

- Can become too hard if poorly prepared.
- May crack if handled roughly.
- Requires careful consistency control.
- Needs appropriate food safety precautions when egg whites are used.

3. Glace icing

Glace icing is a simple icing made by mixing icing sugar with a small amount of water or lemon juice to form a smooth, pourable or spreadable mixture.



Ingredients:

- Icing sugar.
- Water or lemon juice.
- Food colouring where desired.

Preparation procedure:

1. Sift icing sugar into a clean bowl.

2. Add water or lemon juice gradually.
3. Mix until smooth.
4. Adjust the thickness by adding small quantities of liquid or icing sugar.
5. Pour or spread over a completely cooled cake.
6. Allow it to set.

Uses:

- Covering simple cakes.
- Drizzling over cakes.
- Decorating loaf cakes.
- Making a simple glossy finish.

Advantages:

- Easy to prepare.
- Requires few ingredients.
- Inexpensive.
- Requires little equipment.
- Can be prepared quickly.

Disadvantages:

- Provides less elaborate decoration.
- May run off the cake if too thin.
- Can crack or become uneven if too thick.
- Does not provide the same structural covering as fondant.

4. Fondant icing

Fondant icing is a soft, pliable sugar-based paste used to cover cakes and make decorative shapes.



Uses:

- Covering cakes.
- Making flowers and leaves.
- Creating decorative figures.
- Producing letters and numbers.
- Making ribbons and bows.
- Creating themed celebration cakes.

Procedure for covering a cake using fondant:

1. Bake the cake and allow it to cool completely.
2. Level the cake if necessary.
3. Apply a suitable thin layer of buttercream or another appropriate coating.
4. Knead the fondant until smooth and pliable.
5. Dust the working surface lightly with suitable icing sugar or cornflour.
6. Roll out the fondant evenly.
7. Lift it carefully over the cake.
8. Smooth the top and sides.
9. Trim excess fondant.
10. Add decorative shapes and finishing details.

Advantages:

- Produces a smooth and professional appearance.
- Can be shaped into many designs.
- Suitable for themed cakes.
- Provides a uniform covering.

Disadvantages:

- Can be expensive.
- Requires skill and practice.
- May become dry and crack.
- Can be difficult to handle in very warm conditions.

1.4.6 TECHNIQUES USED IN CAKE DECORATION

Cake decoration involves several techniques. The choice depends on the type of cake, occasion, design and available materials.

1. Spreading

Spreading involves applying icing evenly over the surface and sides of a cake using a palette knife or spatula.



Procedure:

1. Ensure that the cake has cooled completely.
2. Place it on a cake board or turntable.
3. Apply a thin layer of icing.
4. Spread icing evenly over the top.
5. Apply icing to the sides.
6. Smooth the surface using a palette knife or scraper.
7. Add additional decoration where required.

Uses:

- Covering cakes with buttercream.
- Preparing a smooth base for decoration.
- Filling spaces between cake layers.

2. Piping

Piping is the process of forcing icing through a piping bag fitted with a nozzle to produce patterns and decorative designs.





Common piping patterns:

- Rosettes.
- Stars.
- Shells.
- Borders.
- Ropes.
- Leaves.
- Flowers.
- Writing and lettering.

Procedure:

1. Prepare icing of suitable consistency.
2. Select an appropriate piping nozzle.
3. Fit the nozzle into a piping bag.

4. Fill the bag with icing.
5. Twist the top of the bag to control pressure.
6. Hold the bag at a suitable angle.
7. Apply steady pressure.
8. Release pressure before lifting the bag to finish the pattern.

Importance:

- Creates attractive designs.
- Produces decorative patterns.
- Allows writing on cakes.
- Improves commercial presentation.

3. Rolling and covering

This technique involves rolling out fondant or another suitable covering and placing it over the cake.

Uses:

- Covering celebration cakes.
- Producing smooth surfaces.
- Creating themed cake designs.

4. Dusting

Dusting involves lightly sprinkling icing sugar, cocoa powder or other suitable edible powder over a cake.

Uses:

- Creating a simple decorative finish.
- Producing patterns using stencils.
- Improving the appearance of cakes.
- Adding flavour.

5. Drizzling

Drizzling involves allowing a thin icing, chocolate or sauce to flow over the surface of a cake in decorative lines.

Uses:

- Decorating loaf cakes.
- Creating chocolate patterns.
- Improving the appearance of cupcakes.
- Adding flavour.

6. Sprinkling

Sprinkling involves distributing edible decorative materials over a cake.

Examples include:

- Sugar sprinkles.
- Chocolate chips.
- Coconut flakes.
- Chopped nuts.
- Edible pearls.

Importance:

- Adds colour.
- Improves appearance.
- Adds texture.
- Provides variety.

7. Layering

Layering involves placing two or more cake layers together with filling or icing between them.

Procedure:

1. Bake the required number of cake layers.
2. Cool them completely.
3. Level the layers if necessary.
4. Spread an even layer of filling.
5. Place the next cake layer carefully.
6. Repeat where necessary.
7. Cover and decorate the cake.

8. Stencilling

Stencilling involves placing a cut-out pattern on a cake and applying icing sugar, cocoa or another suitable decorative material over it.

Uses:

- Creating letters and symbols.
- Making patterns.
- Producing decorative designs.
- Decorating cakes for special occasions.

9. Using edible decorations

Edible decorations are food materials used to improve the appearance of cakes.

Examples:

- Fresh fruits.
- Chocolate pieces.
- Edible flowers from safe food sources.

- Sugar flowers.
- Edible pearls.
- Coconut flakes.

Important: Use only decorations that are safe for consumption. Non-edible supports and ornaments must be removed before serving.

1.4.7 COMMON FAULTS IN CAKE MAKING, THEIR CAUSES AND REMEDIES

Meaning of cake faults

Cake faults are defects or undesirable results that occur during the preparation, baking, cooling or storage of cakes.

They may affect the cake's appearance, texture, flavour, shape and quality.

1. Cake sinking in the centre

Description: The middle of the cake becomes sunken or collapses after baking.



Possible causes:

- Opening the oven door too early.
- Using too much raising agent.
- Underbaking.
- Incorrect ingredient proportions.
- Excessive liquid.
- Overbeating the mixture in some recipes.
- Poor oven temperature control.

Remedies:

- Follow the correct recipe.
- Measure raising agents accurately.
- Preheat the oven.
- Avoid opening the oven door during the early stages of baking.
- Bake for the recommended time.
- Test the cake before removing it.

2. Cake is too heavy or dense

Description: The cake has a compact texture and does not rise adequately.

Causes:

- Insufficient raising agent.
- Incorrect mixing.
- Failure to incorporate enough air.
- Excessive liquid.
- Using unsuitable flour.
- Overmixing after adding flour.
- Incorrect oven temperature.

Remedies:

- Use fresh raising agents.
- Measure ingredients accurately.
- Follow the correct mixing method.
- Sift flour where appropriate.
- Fold flour gently into light mixtures.
- Maintain the recommended oven temperature.

3. Cake is too dry

Description: The cake lacks moisture and may crumble excessively.

Causes:

- Overbaking.
- Excessive flour.
- Insufficient fat or liquid.
- Incorrect oven temperature.
- Poor storage.
- Using an unsuitable recipe.

Remedies:

- Measure ingredients accurately.
- Avoid overbaking.
- Use the correct oven temperature.
- Store cakes in suitable airtight containers after cooling.
- Follow the correct recipe.

4. Cake has a burnt crust

Description: The outside of the cake becomes excessively dark or burnt.



Causes:

- Oven temperature is too high.
- Cake is placed too close to the heating element.
- Baking time is too long.
- Cake tin is unsuitable.

- Excessive sugar in the mixture.

Remedies:

- Use the correct oven temperature.
- Position the cake appropriately.
- Follow the recommended baking time.
- Use suitable baking tins.
- Monitor the cake during baking.

5. Cake has a cracked top

Description: The surface of the cake develops large cracks.

Causes:

- Oven temperature is too high.
- Cake mixture is too thick.
- Excessive raising agent.
- Cake tin is too small.
- Cake is placed too high in the oven.

Remedies:

- Use the recommended oven temperature.
- Measure ingredients accurately.
- Use an appropriately sized cake tin.
- Position the tin correctly.
- Follow the recipe.

6. Cake has large holes or tunnels



Description: The cake contains unusually large holes inside.

Causes:

- Excessive mixing.
- Uneven distribution of raising agent.

- Incorrect flour measurement.
- Poor folding technique.
- Mixture of unsuitable consistency.

Remedies:

- Sift flour and raising agents together.
- Avoid excessive mixing.
- Fold ingredients gently.
- Measure ingredients correctly.

7. Cake has a tough texture

Description: The cake is hard, chewy or less tender than expected.

Causes:

- Excessive mixing after adding flour.
- Excessive gluten development.
- Insufficient fat.
- Too much flour.
- Incorrect ingredient proportions.

Remedies:

- Avoid overmixing.
- Use suitable flour.
- Measure ingredients accurately.
- Follow the recommended method.

8. Cake sticks to the baking tin

Description: The cake becomes difficult to remove from the baking tin.

Causes:

- Tin was not greased properly.
- Baking paper was not used where necessary.
- Cake was removed too early or too late.
- Cake mixture was unsuitable.

Remedies:

- Grease the tin appropriately.
- Line the tin with baking paper where necessary.
- Allow the cake to rest briefly before removing it.
- Use suitable baking tins.

9. Cake has an uneven or peaked top

Causes:

- Oven temperature is too high.
- Mixture is unevenly distributed in the tin.
- Cake tin is unsuitable.
- Incorrect proportions of ingredients.

Remedies:

- Spread the mixture evenly.
- Use the correct tin size.
- Maintain the correct oven temperature.
- Follow the recipe accurately.

10. Cake has an unpleasant taste

Causes:

- Excessive baking powder or baking soda.
- Rancid fat.
- Spoiled eggs.
- Poor-quality ingredients.
- Excessive flavouring.
- Incorrect ingredient proportions.

Remedies:

- Use fresh ingredients.
- Measure raising agents accurately.
- Check the quality of eggs and fat.
- Use the recommended quantities of flavouring.
- Store ingredients correctly.

Summary table of common cake faults

Fault	Likely cause	Remedy
Sunken centre	Underbaking or excess raising agent	Measure correctly and bake adequately
Heavy cake	Insufficient air or incorrect mixing	Use correct mixing method
Dry cake	Overbaking or too much flour	Follow recipe and baking time
Burnt crust	Excessive oven temperature	Control oven temperature
Cracked top	Oven too hot	Use correct temperature
Large holes	Overmixing or uneven raising agent	Mix and fold correctly

Tough cake	Excessive gluten development	Avoid overmixing
Sticking to tin	Poor greasing	Grease and line the tin
Uneven top	Poor distribution or high heat	Spread evenly and control heat
Unpleasant taste	Poor ingredients or excess raising agent	Use fresh ingredients and accurate measurements

1.4.8 COMMON FAULTS IN CAKE DECORATION AND THEIR REMEDIES

1. Icing is too runny

Causes:

- Too much liquid.
- Incorrect icing sugar proportions.
- Warm working conditions.
- Butter or cream becoming too soft.

Remedies:

- Add more sifted icing sugar gradually where appropriate.
- Chill suitable icing briefly.
- Use the correct ingredient proportions.
- Work in a cool environment where possible.

2. Icing is too hard or stiff

Causes:

- Too much icing sugar.
- Insufficient liquid.
- Excessive drying.

Remedies:

- Add small quantities of suitable liquid.
- Mix until the desired consistency is achieved.
- Keep icing covered when not in use.

3. Buttercream melts

Causes:

- High room temperature.
- Excessive heat from the cake.
- Incorrect storage.
- Poor icing consistency.

Remedies:

- Allow the cake to cool completely.
- Refrigerate the decorated cake where appropriate.

- Use suitable ingredients and proportions.
- Avoid decorating in excessively hot conditions.

4. Fondant cracks

Causes:

- Fondant is too dry.
- Excessive kneading or incorrect handling.
- Rolling it too thinly.
- Poor storage.

Remedies:

- Knead it until pliable.
- Keep unused fondant covered.
- Roll it to a suitable thickness.
- Handle it carefully.

5. Piped patterns lose their shape

Causes:

- Icing is too soft.
- Icing bag is held incorrectly.
- Excessive pressure.
- Warm conditions.

Remedies:

- Adjust icing consistency.
- Use an appropriate nozzle.
- Apply steady pressure.
- Chill suitable icing where necessary.

6. Uneven cake covering

Causes:

- Uneven spreading.
- Cake surface is not level.
- Insufficient icing.
- Poor use of decorating tools.

Remedies:

- Level the cake before decorating.
- Use a palette knife and scraper.

- Apply icing evenly.
- Use a turntable where available.

1.4.9 HYGIENE AND SAFETY IN CAKE MAKING AND DECORATION

Cake making involves handling ingredients, equipment and heat. Therefore, hygiene and safety are essential.

Food hygiene practices

- Wash hands before handling ingredients.
- Use clean utensils and equipment.
- Wash fruits before adding them to cakes.
- Use fresh eggs and other ingredients.
- Avoid cross-contamination between raw and ready-to-eat foods.
- Keep ingredients covered.
- Clean and sanitise working surfaces appropriately.
- Store perishable ingredients at safe temperatures.
- Keep decorated cakes protected from dust, insects and contamination.
- Refrigerate cakes containing cream, custard or other perishable fillings.

Safety practices

- Use oven gloves when handling hot tins.
- Avoid touching hot oven surfaces.
- Switch off electrical equipment after use.
- Keep electrical cables away from water.
- Handle knives and sharp tools carefully.
- Keep the floor dry.
- Do not leave hot fat or melted ingredients unattended.
- Follow instructions when operating ovens and mixers.

Environmental conservation

- Avoid unnecessary wastage of ingredients.
- Use reusable equipment where practical.
- Dispose of food waste responsibly.
- Switch off ovens and electrical appliances when not in use.
- Use water carefully during cleaning.
- Recycle suitable packaging materials.

1.4.10 EMERGING TRENDS IN CAKE MAKING AND DECORATION

Cake making continues to develop due to changes in technology, consumer preferences, creativity and business opportunities.







1. Themed cakes

These are cakes decorated to represent a particular event, interest or theme.

Examples:

- Birthday cakes.
- Graduation cakes.
- Wedding cakes.
- Baby shower cakes.
- Sports-themed cakes.
- School celebration cakes.

2. Minimalist cake decoration

Minimalist cakes use simple designs, limited colours and neat finishes.

Characteristics:

- Simple icing.
- Limited decorative details.
- Clean lines.
- Small messages.
- Simple floral patterns.

3. Personalised cakes

These are cakes designed according to a customer's preferences.

Examples:

- Cakes bearing a person's name.
- Cakes with photographs printed using edible materials.
- Cakes with personalised messages.
- Cakes designed around a customer's favourite colour or hobby.

4. Cupcakes and mini cakes

Cupcakes and mini cakes are small individual cakes that are easy to package, distribute and sell.

Advantages:

- Easy to serve.
- Convenient for parties.
- Can be decorated in different designs.
- Suitable for small-scale businesses.

5. Healthy cake alternatives

Some consumers prefer cakes prepared with alternative ingredients.

Examples include:

- Wholemeal flour.
- Reduced-sugar recipes.
- Fruit-based cakes.
- Carrot cakes.
- Banana cakes.
- Recipes using suitable plant-based ingredients.

Important: A cake made with alternative ingredients is not automatically suitable for every dietary need. Ingredients and possible allergens should be clearly identified.

6. Use of technology

Technology has influenced cake making and decoration through:

- Electric mixers.
- Digital weighing scales.
- Temperature-controlled ovens.
- Online cake design tutorials.
- Digital marketing.
- Online customer ordering.
- Food photography and social media advertising.

7. Edible printing

Edible printing involves using food-grade edible ink and edible sheets to produce images or messages for cake decoration.

Uses:

- Printing photographs.
- Creating logos.
- Producing themed cake designs.
- Personalising cakes.

8. Sustainable cake making

This involves reducing environmental impact during cake preparation and selling.

Examples:

- Using locally available ingredients.
- Reducing food wastage.
- Using reusable cake tins.
- Choosing recyclable packaging.
- Managing electricity and water carefully.

1.4.11 CAKE MAKING AS AN ENTREPRENEURIAL ACTIVITY IN KENYA

Cake making can provide employment and income-generating opportunities for learners and households.

Possible cake-making business opportunities

- Home-based cake businesses.
- Bakery operations.
- Cake decoration services.
- Cupcake production.
- Supplying cakes to schools.
- Supplying cakes to hotels and restaurants.

- Event cake services.
- Online cake ordering and delivery.

Requirements for starting a small cake-making business

1. **Skills:** Knowledge of measuring, mixing, baking and decoration.
2. **Equipment:** Oven, weighing scale, mixing bowls, tins and decorating tools.
3. **Ingredients:** Flour, sugar, fat, eggs, milk and decoration materials.
4. **Capital:** Money to purchase equipment and ingredients.
5. **Market research:** Identifying potential customers.
6. **Pricing:** Calculating ingredient, labour, electricity, packaging and transport costs.
7. **Hygiene:** Maintaining safe food preparation standards.
8. **Marketing:** Promoting products through posters, referrals and digital platforms.
9. **Packaging:** Using suitable food-grade packaging.
10. **Customer service:** Delivering products on time and meeting customer expectations.

Qualities of a successful cake entrepreneur

- Creativity.
- Honesty.
- Good communication.
- Time management.
- Financial discipline.
- Attention to detail.
- Cleanliness.
- Patience.
- Willingness to learn.
- Ability to respond to customer needs.

Simple costing example

A learner prepares one cake for sale.

Item	Illustrative cost (KSh)
Flour	120
Sugar	100
Eggs	150
Margarine	180
Milk and flavouring	80
Baking powder and other ingredients	40
Packaging	50
Electricity and other costs	80

Total cost	800

If the cake is sold for KSh 1,100:

Profit=Selling price−Total costProfit=Selling price−Total cost

=1,100−800=KSh 300=1,100−800=KSh 300

The figures are illustrative and should be adjusted to actual local prices.

1.4.12 PRACTICAL LEARNING EXPERIENCES

The learner should participate in practical activities to develop competence in cake making and decoration.

Activity 1: Preparing a simple vanilla cake using the creaming method



Suggested ingredients:

- 250 g wheat flour.
- 200 g sugar.
- 200 g margarine or butter.
- 3–4 eggs, depending on size and recipe.
- Baking powder according to the selected recipe.
- Milk as required.
- Vanilla essence.

Procedure:

1. Wash hands and clean the working surface.
2. Assemble the equipment.
3. Measure all ingredients.

4. Grease and line the cake tin.
5. Sift flour and baking powder.
6. Cream margarine and sugar until light and fluffy.
7. Add eggs gradually while beating.
8. Add vanilla essence.
9. Fold in the flour.
10. Add milk gradually to achieve a suitable consistency.
11. Transfer the mixture into the prepared tin.
12. Bake in a preheated oven according to the recipe.
13. Test for doneness.
14. Cool the cake on a wire rack.
15. Observe the texture, colour, flavour and volume.

Activity 2: Preparing a sponge cake using the whisking method

Procedure:

1. Prepare the ingredients and equipment.
2. Grease and line the cake tin.
3. Whisk eggs and sugar until thick and pale.
4. Sift the flour.
5. Fold flour gently into the egg mixture.
6. Transfer the mixture carefully into the tin.
7. Bake immediately.
8. Cool and observe the texture.

Activity 3: Decorating a cake using buttercream



Procedure:

1. Prepare buttercream.
2. Ensure the cake has cooled completely.
3. Place the cake on a cake board.
4. Spread a thin layer of buttercream over the cake.
5. Smooth the surface using a palette knife.
6. Divide the remaining buttercream into portions.
7. Add suitable food colouring.
8. Fill piping bags.
9. Pipe rosettes, stars or borders.
10. Add suitable edible decorations.
11. Evaluate the finished cake.

Activity 4: Preparing a cake decoration exhibition

Learners may work in groups to:

- Research different types of icing.
- Prepare sample decorations.
- Display cakes decorated using different techniques.
- Explain the tools and materials used.
- Discuss hygiene and safety.
- Evaluate the appearance and quality of the finished products.

Activity 5: Researching emerging trends

Learners should:

- Watch suitable cake-making videos.
- Visit a bakery where possible.
- Interview a cake decorator.
- Research new cake decoration techniques.
- Prepare a presentation on emerging trends.
- Discuss opportunities for entrepreneurship.

REVISION EXERCISES

GRADE 11 HOME SCIENCE

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.4: CAKE MAKING AND DECORATION

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Instructions: Answer all questions. Choose the correct answer from the alternatives A, B, C and D. Each question carries 1 mark.

1. Which one of the following ingredients provides the main structure in most cakes?

A. Sugar
B. Wheat flour
C. Vanilla essence
D. Food colouring

2. The main function of sugar in cake making is to:

A. Harden the cake
B. Sweeten the cake and improve flavour
C. Remove moisture completely
D. Prevent all chemical reactions

3. Which ingredient helps to incorporate and retain air during the creaming method?

A. Fat
B. Salt
C. Water
D. Food colouring

4. The main function of eggs in cake making is to:

A. Provide colour only
B. Bind ingredients, provide structure and help incorporate air
C. Prevent the cake from rising
D. Replace all raising agents

5. Which equipment is most suitable for measuring small quantities of baking powder?

A. Measuring spoons
B. Cooling rack
C. Cake turntable
D. Palette knife

6. Which equipment is used to remove lumps and incorporate air into flour?

A. Cake scraper
B. Sieve
C. Piping bag
D. Baking tray

7. Baking powder is classified as a:

A. Biological raising agent
B. Mechanical raising agent
C. Chemical raising agent
D. Physical tool

8. Baking soda is also known as:

A. Sodium chloride
B. Sodium bicarbonate
C. Calcium carbonate
D. Potassium chloride

9. Which ingredient is commonly required for baking soda to produce carbon dioxide effectively?

A. An acidic ingredient
B. Food colouring
C. Icing sugar
D. Vegetable oil

10. Which gas is mainly produced by common chemical raising agents?

A. Oxygen
B. Nitrogen
C. Carbon dioxide
D. Hydrogen

11. Which method involves beating fat and sugar until light and fluffy?

A. Whisking method
B. Creaming method
C. Melting method
D. Rubbing-in method

12. Which method involves beating eggs and sugar until thick and pale?

A. Rubbing-in method
B. Melting method
C. Whisking method
D. Creaming method

13. The rubbing-in method involves:

A. Boiling flour in water
B. Rubbing fat into flour using the fingertips
C. Whisking eggs until stiff
D. Melting all ingredients together

14. Which cake-making method commonly involves melting fat and sugar before combining them with other ingredients?

A. Whisking method
B. Creaming method
C. Melting method
D. Folding method

15. Why is folding important when preparing a whisked sponge cake?

A. It removes all the air
B. It prevents the flour from dissolving
C. It helps retain incorporated air
D. It makes the cake mixture cold

16. What is the main purpose of preheating an oven?

A. To remove all moisture from the kitchen
B. To ensure the oven reaches the required temperature before baking
C. To cool the cake tin
D. To make the flour rise before mixing

17. Which of the following is the best way to test whether a cake is fully baked?

A. Shake the oven
B. Insert a clean skewer into the centre
C. Pour cold water over the cake
D. Remove the cake immediately after putting it in the oven

18. What is the importance of cooling a cake completely before applying buttercream?

A. To make the cake heavier
B. To prevent the icing from melting
C. To increase the quantity of flour
D. To remove all the flavour

19. Which icing is mainly prepared using butter or margarine and icing sugar?

A. Royal icing
B. Glace icing
C. Buttercream icing
D. Fondant icing

20. Which icing is commonly used to produce firm, detailed piped decorations?

A. Royal icing
B. Glace icing
C. Melted chocolate only
D. Whipped cream only

21. Glace icing is commonly prepared using:

A. Wheat flour and eggs
B. Icing sugar and water or lemon juice
C. Margarine and salt
D. Baking powder and milk

22. Which material is most suitable for covering a cake with a smooth, pliable sugar paste?

A. Baking soda
B. Fondant
C. Plain flour
D. Granulated sugar

23. Which equipment is used to force icing through a nozzle to create decorative patterns?

A. Measuring jug
B. Piping bag
C. Cooling rack
D. Sieve

24. Which tool is used to rotate a cake while decorating it?

A. Cake turntable
B. Weighing scale
C. Oven thermometer
D. Measuring spoon

25. A cake that sinks in the centre may have been caused by:

A. Correct baking temperature
B. Opening the oven door too early
C. Accurate measurement of ingredients
D. Proper cooling

26. A cake becomes tough and chewy mainly due to:

A. Excessive mixing after adding flour
B. Proper folding
C. Correct ingredient measurement
D. Using a clean cake tin

27. What is the most likely cause of a dry cake?

A. Proper cooling
B. Overbaking
C. Correct measurement
D. Adequate moisture

28. Which practice promotes food hygiene during cake decoration?

A. Using dirty piping bags
B. Handling food with unwashed hands
C. Using clean equipment and fresh ingredients
D. Leaving cream-based cakes in direct sunlight

29. Which of the following is an emerging trend in cake decoration?

A. Edible printing
B. Using contaminated decorations
C. Ignoring customer preferences
D. Storing cakes uncovered

30. A learner who calculates the cost of ingredients, sets a selling price and markets decorated cakes is demonstrating:

A. Food preservation
B. Entrepreneurship
C. Food contamination
D. Food wastage

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Instructions: Answer all questions. Write clear and well-organised responses. Give relevant examples where necessary.

QUESTION 1: REQUIREMENTS FOR CAKE MAKING (8 MARKS)

a) Define cake making. (2 marks)

b) State four ingredients used in cake making. (4 marks)

c) Give two functions of eggs in cake making. (2 marks)

QUESTION 2: RAISING AGENTS (8 MARKS)

a) Define a raising agent. (2 marks)

b) Identify three types of raising agents used in cake making. (3 marks)

c) Explain three ways in which raising agents improve the quality of cakes. (3 marks)

QUESTION 3: METHODS OF CAKE MAKING (8 MARKS)

a) Name four methods of cake making. (4 marks)

b) Explain the procedure of preparing a cake using the creaming method. (4 marks)

QUESTION 4: CAKE DECORATION (8 MARKS)

a) Define cake decoration. (2 marks)

b) Identify three types of icing used in cake decoration. (3 marks)

c) State three techniques used in cake decoration. (3 marks)

QUESTION 5: COMMON FAULTS IN CAKE MAKING AND DECORATION (8 MARKS)

a) State four possible causes of a cake sinking in the centre. (4 marks)

b) Give two causes of buttercream icing becoming too soft. (2 marks)

c) State two ways of preventing a cake from sticking to a baking tin. (2 marks)

QUESTION 6: PRACTICAL APPLICATION – CAKE MAKING AND ENTREPRENEURSHIP (10 MARKS)

A Grade 11 learner prepares a birthday cake for sale in Kilgoris. The cake is heavy, has a sunken centre and is decorated with buttercream that melts shortly after application.

a) Identify two possible causes of the heavy cake. (2 marks)

b) Explain two possible causes of the sunken centre. (2 marks)

c) State two measures that can prevent buttercream from melting during decoration. (2 marks)

d) Give two hygiene practices the learner should observe when preparing and decorating the cake. (2 marks)

e) State two ways the learner can promote the cake-making business. (2 marks)

MARKING SCHEME

GRADE 11 HOME SCIENCE

STRAND 1.0: FOOD AND NUTRITION

SUB-STRAND 1.4: CAKE MAKING AND DECORATION

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	B
3	A
4	B
5	A
6	B
7	C
8	B
9	A
10	C
11	B
12	C
13	B
14	C
15	C
16	B
17	B
18	B
19	C
20	A
21	B
22	B
23	B
24	A
25	B

26	A
27	B
28	C
29	A
30	B

30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: REQUIREMENTS FOR CAKE MAKING (8 MARKS)

a) Define cake making. (2 marks)

Cake making is the process of combining measured ingredients such as flour, sugar, fat and eggs, mixing them using an appropriate method and baking the mixture to produce a cake.

- Combining and preparing the ingredients correctly – 1 mark.
- Baking the mixture to produce a cake – 1 mark.

b) State four ingredients used in cake making. (4 marks)

Award 1 mark for each correct response.

1. Wheat flour.
2. Sugar.
3. Fat (butter, margarine or shortening).
4. Eggs.
5. Milk.
6. Baking powder.
7. Baking soda.
8. Salt.
9. Vanilla essence or other flavourings.
10. Water.

Any four correct responses. (4 × 1 = 4 marks)

c) Give two functions of eggs in cake making. (2 marks)

Award 1 mark for each correct response.

1. Bind the ingredients together.
2. Provide structure to the cake.
3. Help incorporate air during whisking.
4. Improve the colour of the cake.
5. Add flavour.
6. Provide moisture.

7. Improve the nutritional value by supplying proteins and other nutrients.
8. Help emulsify fat and liquid ingredients.

Any two well-stated functions. (2 × 1 = 2 marks)

QUESTION 2: RAISING AGENTS (8 MARKS)

a) Define a raising agent. (2 marks)

A raising agent is a substance or method used to introduce or produce gas in a cake mixture, causing it to expand and become light and porous during baking.

- Introduces or produces gas in the mixture – 1 mark.
- Causes the cake to rise and develop a light texture – 1 mark.

b) Identify three types of raising agents used in cake making. (3 marks)

Award 1 mark for each correct type.

1. Chemical raising agents – e.g. baking powder and baking soda.
2. Biological raising agents – e.g. yeast.
3. Mechanical raising agents – e.g. air incorporated through whisking or creaming.

Any three correctly identified types. (3 marks)

c) Explain three ways in which raising agents improve the quality of cakes. (3 marks)

Award 1 mark for each well-explained response.

1. Increase cake volume: The gas produced expands during baking, making the cake rise.
2. Improve texture: They create air spaces, making the cake light and porous.
3. Improve softness: They help produce a tender and less dense cake.
4. Improve appearance: They help produce a well-risen cake with a desirable shape.
5. Improve palatability: A properly raised cake is generally easier and more pleasant to eat.

Any three correct explanations. (3 marks)

QUESTION 3: METHODS OF CAKE MAKING (8 MARKS)

a) Name four methods of cake making. (4 marks)

Award 1 mark for each correct method.

1. Creaming method.
2. Whisking method.
3. Rubbing-in method.
4. Melting method.

(4 marks)

b) Explain the procedure of preparing a cake using the creaming method. (4 marks)

Award 1 mark for each correctly explained stage.

1. Prepare the equipment and ingredients: Gather the ingredients, grease and line the baking tin, and preheat the oven to the required temperature.
2. Cream fat and sugar: Beat the fat and sugar together until the mixture becomes light, soft and fluffy.
3. Add eggs: Beat in the eggs gradually, one at a time, mixing well after each addition. Add a little flour if necessary to prevent curdling.
4. Add flour and other ingredients: Sieve the flour with the raising agent and fold it gently into the mixture. Add flavouring and any required liquid.
5. Transfer the mixture: Pour the mixture into the prepared baking tin and level the surface.
6. Bake: Place the tin in the preheated oven and bake until the cake is well risen and cooked.
7. Test for doneness: Insert a clean skewer into the centre. It should come out clean or with a few dry crumbs.
8. Cool: Remove the cake from the oven, allow it to rest briefly, then transfer it to a cooling rack.

Award any four correctly explained stages. (4 × 1 = 4 marks)

QUESTION 4: CAKE DECORATION (8 MARKS)

a) Define cake decoration. (2 marks)

Cake decoration is the process of improving the appearance of a cake by applying icing, toppings, edible decorations and other decorative designs.

- Improving the appearance of a cake – 1 mark.
- Using icing, toppings or other decorative materials – 1 mark.

b) Identify three types of icing used in cake decoration. (3 marks)

Award 1 mark for each correct response.

1. Buttercream icing.
2. Royal icing.
3. Glace icing.
4. Fondant icing.
5. Cream cheese icing.
6. Ganache.
7. Whipped cream icing.

Any three correct responses. (3 marks)

c) State three techniques used in cake decoration. (3 marks)

Award 1 mark for each correct response.

1. Piping: Applying icing through a piping bag and nozzle to create patterns, flowers and borders.
2. Spreading: Applying icing evenly over the surface of a cake using a palette knife or spatula.
3. Fondant covering: Covering a cake with rolled sugar paste to create a smooth finish.
4. Stencilling: Using a stencil to create patterns on the cake.

5. Edible printing: Applying printed edible images to a cake.
6. Airbrushing: Using food-safe colouring equipment to create coloured effects.
7. Modelling: Shaping edible materials into flowers, figures and other decorations.
8. Drizzling: Pouring icing, chocolate or ganache over a cake to create decorative effects.

Any three correct techniques. (3 marks)

QUESTION 5: COMMON FAULTS IN CAKE MAKING AND DECORATION (8 MARKS)

a) State four possible causes of a cake sinking in the centre. (4 marks)

Award 1 mark for each correct response.

1. Opening the oven door too early during baking.
2. Using too much baking powder or another raising agent.
3. Baking at a temperature that is too low.
4. Removing the cake from the oven before it is fully baked.
5. Incorrect measurement of ingredients.
6. Adding too much liquid to the cake mixture.
7. Overbeating the mixture, especially after adding flour.
8. Using an unsuitable baking tin or filling it excessively.

Any four correct responses. (4 marks)

b) Give two causes of buttercream icing becoming too soft. (2 marks)

Award 1 mark for each correct response.

1. Using too much liquid when preparing the buttercream.
2. Working in a hot environment.
3. Using butter or margarine that is too soft or melted.
4. Using an insufficient quantity of icing sugar.
5. Applying buttercream to a warm cake.
6. Incorrect proportions of ingredients.

Any two correct responses. (2 marks)

c) State two ways of preventing a cake from sticking to a baking tin. (2 marks)

Award 1 mark for each correct response.

1. Grease the baking tin with butter, margarine or suitable oil.
2. Line the base of the tin with baking parchment.
3. Dust the greased tin lightly with flour where appropriate.
4. Allow the cake to cool slightly before removing it from the tin.
5. Use a properly prepared non-stick baking tin.

Any two correct responses. (2 marks)

QUESTION 6: PRACTICAL APPLICATION – CAKE MAKING AND ENTREPRENEURSHIP (10 MARKS)

a) Identify two possible causes of the heavy cake. (2 marks)

Award 1 mark for each correct response.

1. Using too little raising agent.
2. Using too much flour.
3. Incorrect measurement of ingredients.
4. Insufficient creaming of fat and sugar.
5. Inadequate incorporation of air into the mixture.
6. Overmixing the mixture after adding flour.
7. Using expired or ineffective baking powder.
8. Baking at an unsuitable oven temperature.

Any two correct responses. (2 marks)

b) Explain two possible causes of the sunken centre. (2 marks)

Award 1 mark for each correct explanation.

1. Opening the oven door too early: This causes a sudden temperature drop, which may make the cake collapse before its structure has set.
2. Excessive raising agent: Too much gas may be produced, causing the cake to rise rapidly and then collapse.
3. Underbaking: The centre may not have set properly, causing it to sink after removal from the oven.
4. Incorrect oven temperature: A temperature that is too low or unsuitable may prevent the cake from setting properly.
5. Excess liquid: Too much liquid may weaken the cake structure and contribute to collapse.

Any two correct explanations. (2 marks)

c) State two measures that can prevent buttercream from melting during decoration. (2 marks)

Award 1 mark for each correct response.

1. Allow the cake to cool completely before applying buttercream.
2. Decorate the cake in a cool environment.
3. Refrigerate the buttercream before use if it becomes too soft.
4. Use the correct proportions of butter or margarine and icing sugar.
5. Avoid excessive addition of liquid.
6. Refrigerate the decorated cake when appropriate, especially before delivery.

Any two correct responses. (2 marks)

d) Give two hygiene practices the learner should observe when preparing and decorating the cake. (2 marks)

Award 1 mark for each correct response.

1. Wash hands thoroughly before handling ingredients and food.
2. Clean and sanitise working surfaces and equipment.
3. Use clean piping bags, nozzles and decorating tools.
4. Wear clean protective clothing, such as an apron and hair covering.
5. Use fresh, safe and good-quality ingredients.
6. Keep ingredients and finished cakes covered to prevent contamination.
7. Avoid handling food when suffering from infectious illnesses.
8. Store cream-based cakes at appropriate refrigerated temperatures.

Any two correct responses. (2 marks)

e) State two ways the learner can promote the cake-making business. (2 marks)

Award 1 mark for each correct response.

1. Advertise cakes through social media platforms such as WhatsApp, Facebook and Instagram.
2. Distribute posters, brochures and business cards.
3. Offer discounts to first-time customers.
4. Provide high-quality cakes and excellent customer service.
5. Display cake samples and photographs to attract customers.
6. Participate in local exhibitions, school events and community celebrations.
7. Encourage satisfied customers to recommend the business to others.
8. Establish partnerships with event organisers and local businesses.
9. Create a business page or website displaying available cake designs and prices.

Any two correct responses. (2 marks)

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.1: PERSONAL APPEARANCE AND ETIQUETTE

PART I: COMPREHENSIVE TEACHING AND LEARNING NOTES

1.0 INTRODUCTION TO PERSONAL APPEARANCE AND ETIQUETTE

Personal appearance and etiquette are important aspects of an individual's life. They influence how people present themselves, interact with others and participate in different social activities.

Every individual needs to understand how to maintain personal cleanliness, dress appropriately, communicate respectfully and observe acceptable behaviour in society.

In the Kenyan community, personal appearance and etiquette are important at home, school, workplaces, religious gatherings, public functions and social events.

For example:

- A learner should maintain personal cleanliness and wear a neat school uniform.
- A person attending a wedding should dress appropriately for the occasion.
- An individual attending a job interview should communicate confidently and respectfully.
- Family members should observe good table manners when sharing meals.

1.1 Meaning of Personal Appearance

Personal appearance refers to the way an individual looks and presents themselves through physical cleanliness, grooming, clothing, posture, body language and general presentation.

It involves taking care of one's body and choosing an appropriate way of presenting oneself in different environments.

1.2 Meaning of Etiquette

Etiquette refers to the accepted rules and standards of polite behaviour that guide how individuals interact with others in different social situations.

It involves showing respect, consideration, courtesy and good manners when dealing with other people.

Examples include:

1. Greeting people politely.
2. Respecting elders and other members of society.
3. Observing good table manners.
4. Arriving on time for appointments.
5. Using polite language.
6. Respecting other people's privacy.
7. Dressing appropriately for different occasions.

1.3 Difference Between Personal Appearance and Etiquette

Personal appearance	Etiquette
Concerns how an individual presents themselves physically.	Concerns how an individual behaves towards others.

Includes grooming, clothing and posture.	Includes politeness, respect and communication.
Influences first impressions through physical presentation.	Influences relationships through behaviour.
Example: Wearing clean, ironed clothes.	Example: Greeting visitors politely.

2.0 ASPECTS THAT ENHANCE PERSONAL APPEARANCE

Personal appearance is influenced by several factors. These factors work together to promote a clean, healthy, confident and presentable individual.

The main aspects include:

1. Skin care.
2. Hair care.
3. Body language and posture.
4. Clothing and dressing.
5. Nutrition and hydration.
6. Accessories.
7. Cosmetics: choice and use.
8. Personal hygiene.

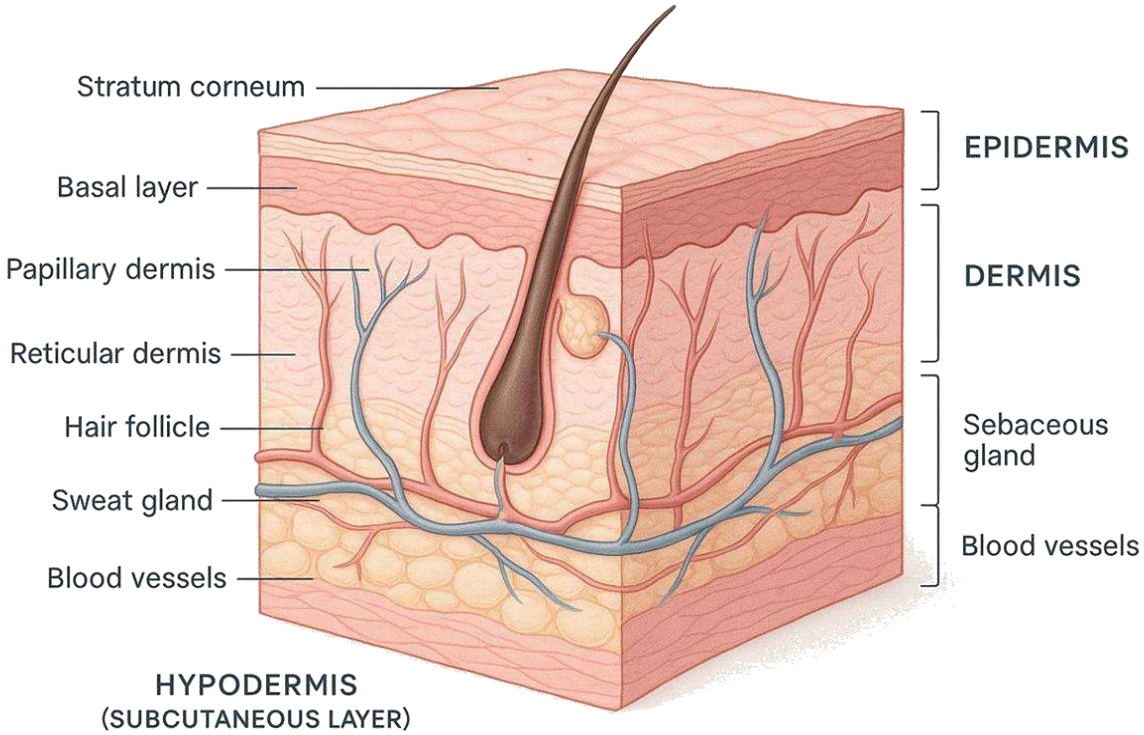
2.1 SKIN CARE

2.1.1 Meaning of Skin Care

Skin care refers to practices and activities undertaken to maintain healthy, clean, protected and attractive skin.

The skin is the largest organ of the human body. It covers and protects internal body structures against injury, harmful microorganisms and excessive water loss.

Skin care is important because the skin contributes greatly to personal appearance and general health.



2.1.2 Structure of the Skin

The skin consists of three main layers.

1. Epidermis

- It is the outermost layer of the skin.
- It provides protection against harmful microorganisms.
- It helps reduce excessive water loss.
- It contains melanin, which gives skin its colour.
- It is continuously renewed as old skin cells are shed.

2. Dermis

- It lies beneath the epidermis.
- It contains blood vessels, nerves and sensory receptors.
- It contains sweat glands and sebaceous glands.
- It contains hair follicles.
- It helps regulate body temperature.

3. Hypodermis (Subcutaneous Layer)

- It is the layer beneath the dermis.
- It contains fatty tissues and connective tissues.
- It provides insulation against heat loss.
- It cushions internal body structures.
- It helps attach the skin to underlying tissues.

2.1.3 Functions of the Skin

1. **Protection:** Protects the body against physical injury, microorganisms and harmful environmental substances.
2. **Temperature regulation:** Sweat production and changes in blood flow help maintain normal body temperature.
3. **Sensation:** Sensory receptors detect pain, pressure, touch, heat and cold.
4. **Excretion:** Sweat removes small quantities of water, salts and waste products.
5. **Vitamin D production:** The skin produces vitamin D when exposed to suitable sunlight.
6. **Prevention of water loss:** The outer skin barrier reduces excessive loss of water from the body.
7. **Storage:** Fat in the subcutaneous layer serves as an energy reserve.

2.1.4 Types of Skin

People have different skin types. Understanding one's skin type helps in choosing suitable skin-care products.

1. Normal Skin

Characteristics:

- Has balanced oil and moisture levels.
- Usually feels comfortable.
- Has few noticeable dry or oily areas.
- Generally has a smooth appearance.

Care:

- Cleanse gently.
- Moisturise when necessary.
- Protect against excessive sun exposure.

2. Dry Skin

Characteristics:

- Produces less natural oil.
- May feel tight after washing.
- May appear rough or flaky.
- Can become irritated easily.

Care:

- Use mild, fragrance-free cleansers.
- Apply suitable moisturisers.
- Avoid excessively hot water.
- Avoid harsh soaps.

3. Oily Skin

Characteristics:

- Produces excess sebum.
- May appear shiny.
- Often has enlarged-looking pores.
- May be prone to pimples and acne.

Care:

- Cleanse gently.
- Use non-comedogenic skin-care products.
- Avoid excessive scrubbing.
- Avoid applying too much heavy oil-based products.

4. Combination Skin

Characteristics:

- Some parts are oily while others are dry or normal.

- The forehead, nose and chin may be oily.
- The cheeks may be dry or normal.

Care:

- Use gentle cleansers.
- Apply products according to the needs of different areas.
- Avoid products that cause irritation.

5. Sensitive Skin

Characteristics:

- Reacts easily to certain products.
- May develop redness, itching or irritation.
- May react to fragrances and harsh chemicals.

Care:

- Use gentle products.
- Test new products on a small area first.
- Avoid known irritants.
- Seek professional advice where necessary.

2.1.5 Daily Skin-Care Practices

1. **Cleansing**

- Wash the face and body regularly using clean water and suitable cleansing products.
- Removes sweat, dirt, excess oil and environmental pollutants.
- Prevents the accumulation of substances that may irritate the skin.

2. **Moisturising**

- Apply suitable moisturisers after cleansing.
- Helps maintain the skin's moisture barrier.
- Prevents excessive dryness and cracking.

3. **Sun protection**

- Use broad-spectrum sunscreen with SPF 30 or higher when appropriate.
- Wear protective clothing and hats.
- Seek shade during periods of intense sunlight.
- Reduces the risk of sunburn and premature skin ageing.

4. **Exfoliation**

- Involves removing dead cells from the skin surface.
- Should be done gently and not excessively.

- Harsh scrubbing can damage the skin barrier.

5. **Adequate sleep**

- Supports normal body repair processes.
- Helps maintain general health and well-being.

6. **Healthy nutrition**

- Eat a balanced diet containing fruits, vegetables, proteins and healthy fats.
- Nutrients support normal skin structure and function.

7. **Adequate hydration**

- Drink sufficient safe drinking water.
- Supports normal body functioning and helps prevent dehydration.

8. **Avoiding harmful substances**

- Avoid unregulated skin-lightening products.
- Avoid applying unknown chemicals to the skin.
- Do not share personal skin-care applicators.

2.1.6 Common Skin Problems

Skin problem	Description	Appropriate care
Acne	Inflammation involving hair follicles and oil glands.	Gentle cleansing and appropriate treatment.
Eczema	A condition causing dry, itchy and inflamed skin.	Moisturising and professional guidance.
Sunburn	Skin damage caused by excessive ultraviolet radiation.	Sun protection and suitable soothing care.
Ringworm	A fungal skin infection.	Appropriate antifungal treatment.
Dry skin	Skin with insufficient moisture and a weakened barrier.	Gentle cleansing and moisturising.
Skin irritation	Reaction to substances or environmental factors.	Avoid irritants and seek advice if persistent.

2.1.7 Importance of Proper Skin Care

1. Maintains cleanliness and freshness.
2. Supports healthy skin functioning.
3. Reduces the risk of some skin infections.
4. Prevents excessive dryness.
5. Improves personal comfort.
6. Promotes confidence.
7. Helps protect against environmental damage.
8. Encourages good personal hygiene.
9. Reduces irritation caused by accumulated dirt and sweat.

10. Promotes a neat and presentable appearance.

2.2 HAIR CARE

2.2.1 Meaning of Hair Care

Hair care refers to practices undertaken to maintain clean, healthy, neat and manageable hair.

Hair is an important part of personal appearance. Proper hair care involves washing, conditioning, combing, styling and protecting the hair and scalp.





2.2.2 Structure of Hair

A hair strand consists of three main layers.

1. Cuticle

- It is the outermost layer.
- It consists of overlapping protective cells.
- It protects the inner parts of the hair.
- A damaged cuticle may make hair appear rough and dull.

2. Cortex

- It is the thickest layer of the hair.
- It contains keratin fibres.
- It gives hair its strength and elasticity.
- It contains melanin, which determines hair colour.

3. Medulla

- It is the innermost part of some hair strands.
- It may be absent in fine hair.
- It consists of loosely arranged cells.

2.2.3 Types and Textures of Hair

Hair differs in texture, thickness, density and curl pattern.

Common descriptions include:

1. **Straight hair:** Hair strands grow without noticeable curls.
2. **Wavy hair:** Hair forms gentle wave patterns.
3. **Curly hair:** Hair forms defined curls.
4. **Coily or kinky hair:** Hair forms tight coils or zigzag patterns, commonly found among people of African descent.

Different hair textures require different care practices.

2.2.4 Daily Hair-Care Practices

1. **Washing hair**

- Wash hair when necessary using a suitable shampoo.
- Removes dirt, sweat and excess oil.
- Keeps the scalp clean.
- Washing frequency depends on hair texture, activity and scalp condition.

2. **Conditioning**

- Apply suitable hair conditioner after shampooing.
- Helps soften hair.
- Improves manageability.
- Reduces tangling and breakage.

3. **Combing and brushing**

- Use suitable combs and brushes.
- Detangle gently.
- Avoid pulling hair forcefully.
- For tightly coiled hair, detangling while damp and conditioned may reduce breakage.

4. **Moisturising**

- Apply suitable moisturising products.
- Helps reduce dryness.
- Improves softness and manageability.

5. **Protective styling**

- Use hairstyles that minimise excessive manipulation.
- Avoid excessively tight braids, ponytails and extensions.
- Allow the scalp to remain comfortable.

6. **Scalp care**

- Keep the scalp clean.
- Avoid scratching aggressively.
- Treat persistent itching, scaling or hair loss appropriately.

7. **Trimming**

- Remove damaged or split ends when necessary.
- Helps maintain neatness and manageability.

8. **Avoiding excessive heat**

- Limit frequent use of hot combs, blow dryers and straightening irons.
- Use heat protection products where appropriate.
- Excessive heat can damage hair.

2.2.5 Factors to Consider When Choosing a Hairstyle

1. **Face shape:** A hairstyle should complement the individual's facial features.
2. **Hair texture:** The hairstyle should suit the natural texture of the hair.
3. **Age:** The hairstyle should be suitable for the individual's age and circumstances.
4. **Occupation:** Some workplaces require conservative and neat hairstyles.
5. **Occasion:** A hairstyle for a wedding may differ from one for school or sports.
6. **Cost:** Consider the cost of styling and maintenance.
7. **Time:** Choose a hairstyle that can be maintained within available time.
8. **Climate:** Consider weather conditions and comfort.
9. **Personal preference:** The individual should feel comfortable with the chosen hairstyle.
10. **Hair health:** Avoid hairstyles that cause excessive tension or damage.

2.2.6 Importance of Proper Hair Care

- Maintains clean hair and scalp.
- Reduces hair breakage.

- Improves hair manageability.
- Promotes personal hygiene.
- Reduces unpleasant scalp odour.
- Improves confidence.
- Enhances personal appearance.
- Helps identify scalp problems early.
- Promotes healthy grooming habits.

2.3 BODY LANGUAGE AND POSTURE

2.3.1 Meaning of Body Language

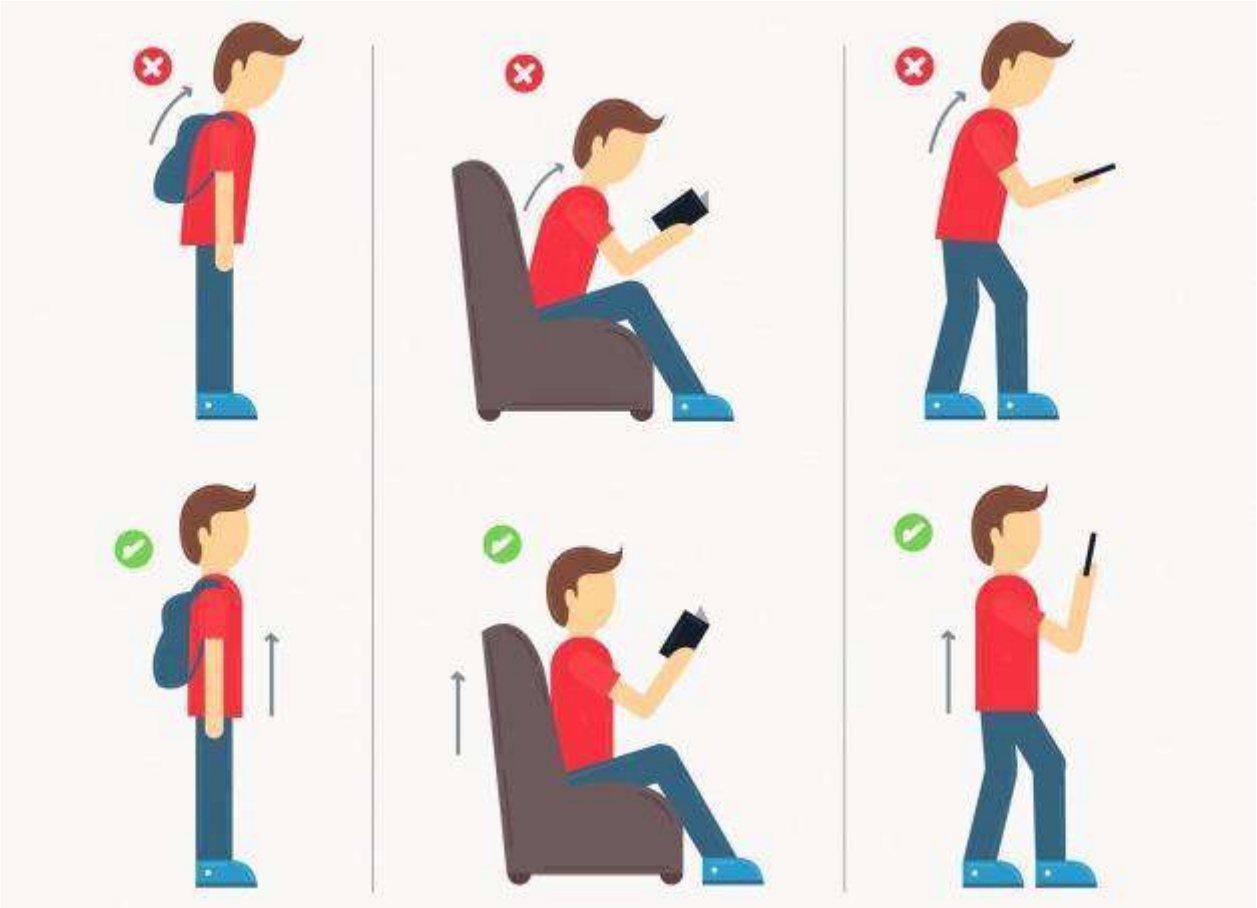
Body language refers to the non-verbal communication expressed through facial expressions, gestures, eye contact, body movements and physical positioning.

Body language communicates feelings, attitudes and intentions without necessarily using spoken words.

2.3.2 Meaning of Posture

Posture refers to the way an individual holds and positions their body when standing, sitting, walking or performing activities.

Good posture contributes to physical comfort, confidence and effective communication.



2.3.3 Types of Body Language

1. Facial expressions

These are movements of facial muscles that communicate emotions.

Examples:

- Smiling may communicate friendliness.
- Frowning may communicate displeasure.
- Raised eyebrows may indicate surprise.
- A relaxed face may communicate calmness.

2. Eye contact

This involves looking towards another person during communication.

Importance:

- Shows attentiveness.
- Communicates confidence.
- Demonstrates interest.
- Helps establish connection.

Eye contact should be natural and culturally appropriate. Staring continuously may make another person uncomfortable.

3. Gestures

Gestures are movements of the hands, arms or head used to communicate.

Examples:

- Nodding to show agreement.
- Waving to greet someone.
- Raising a hand to request permission to speak.
- Pointing to indicate direction.

4. Body orientation

This refers to the direction in which a person positions their body when interacting with others.

Facing a speaker appropriately may communicate attention and respect.

5. Personal space

This refers to the physical distance individuals maintain between themselves and others.

Respecting personal space prevents discomfort and promotes positive interaction.

6. Physical movements

The way a person moves may communicate confidence, nervousness, impatience or calmness.

2.3.4 Characteristics of Good Posture

A. Good standing posture

- Keep the head upright.
- Keep the shoulders relaxed.
- Maintain a natural spinal position.

- Distribute body weight evenly on both feet.
- Avoid locking the knees.
- Keep the abdomen naturally supported.

B. Good sitting posture

- Sit with the back comfortably supported.
- Keep both feet supported.
- Avoid bending excessively forward.
- Keep the shoulders relaxed.
- Position the reading or working material appropriately.

C. Good walking posture

- Keep the head upright.
- Look ahead rather than constantly down.
- Allow the arms to move naturally.
- Take balanced steps.
- Avoid dragging the feet.

2.3.5 Factors Affecting Posture

1. Physical fitness.
2. Health conditions.
3. Type of furniture used.
4. Weight of school bags.
5. Working environment.
6. Habits developed during childhood.
7. Footwear.
8. Fatigue.
9. Confidence.
10. Occupational activities.

2.3.6 Importance of Good Posture and Positive Body Language

1. Promotes confidence.
2. Improves communication.
3. Creates positive first impressions.
4. Helps reduce unnecessary physical strain.
5. Promotes professional presentation.
6. Shows respect to others.

7. Improves attentiveness.
8. Supports comfortable movement.
9. Encourages positive social relationships.
10. Makes an individual appear composed and approachable.

2.3.7 Negative Body Language to Avoid

- Rolling the eyes when someone is speaking.
- Looking away constantly during an important conversation.
- Folding arms aggressively when communicating.
- Pointing fingers disrespectfully.
- Interrupting others with impatient gestures.
- Laughing at people when they make mistakes.
- Invading another person's personal space.
- Constantly checking a phone during conversations.

2.4 CLOTHING AND DRESSING

2.4.1 Meaning of Clothing

Clothing refers to garments and other materials worn on the body for protection, modesty, comfort, identification and personal presentation.

Clothing is an essential part of personal appearance because it influences how an individual looks and feels.

2.4.2 Meaning of Dressing

Dressing refers to the process of selecting and wearing clothes appropriately for a particular activity, environment, occasion or purpose.

Appropriate dressing involves selecting garments that are clean, comfortable, well-fitting and suitable for the situation.

2.4.3 Importance of Clothing

1. **Protection:** Protects the body from cold, excessive heat, sunlight, dust and physical injury.
2. **Modesty:** Covers the body appropriately according to personal, cultural and social expectations.
3. **Identification:** Uniforms identify learners, workers and members of particular organisations.
4. **Comfort:** Appropriate clothing allows easy movement and physical comfort.
5. **Self-expression:** Clothing may communicate personal taste and cultural identity.
6. **Professional presentation:** Suitable dressing promotes a professional image.
7. **Social acceptance:** Appropriate clothing helps individuals participate comfortably in different social environments.
8. **Safety:** Special clothing protects people during work and sports activities.

2.4.4 Types of Clothing

1. Casual wear

These are clothes worn during informal activities.

Examples:

- Jeans.
- T-shirts.
- Casual dresses.
- Shorts.
- Comfortable trousers.
- Polo shirts.

2. Formal wear

These are clothes worn during official or professional occasions.

Examples:

- Business suits.
- Formal dresses.
- Shirts and formal trousers.
- Skirts and formal blouses.
- Formal jackets.

3. Semi-formal wear

These are clothes worn during occasions that require a smart but less formal appearance.

Examples:

- Smart trousers.
- Blouses.
- Shirts.
- Smart dresses.
- Blazers.

4. Sportswear

These are clothes designed for physical activities.

Examples:

- Tracksuits.
- Sports shorts.
- Sports T-shirts.
- Leggings.

- Sports bras.
- Appropriate sports shoes.

5. Protective clothing

These are garments designed to protect the body from specific hazards.

Examples:

- Laboratory coats.
- Overalls.
- Reflective jackets.
- Aprons.
- Gloves.
- Safety boots.

6. Traditional and cultural clothing

These are garments associated with particular communities and cultural practices.

Examples in Kenya include:

- Maasai shúkà.
- Kitenge garments.
- Kikuyu traditional attire.
- Kanga garments.
- Traditional ceremonial clothing from different Kenyan communities.

2.4.5 Principles of Appropriate Dressing

1. **Cleanliness:** Clothes should be clean and free from unpleasant odours.
2. **Neatness:** Garments should be properly ironed where appropriate.
3. **Comfort:** Clothes should allow free movement.
4. **Fit:** Clothing should fit the body appropriately.
5. **Occasion:** Dress according to the purpose of the event.
6. **Weather:** Consider the temperature and prevailing weather conditions.
7. **Modesty:** Respect personal and social expectations regarding dressing.
8. **Durability:** Choose clothing that can withstand intended use.
9. **Colour coordination:** Select colours that complement one another.
10. **Appropriateness:** Consider age, activity and environment.

2.4.6 Factors to Consider When Choosing Clothes

- Age of the wearer.
- Body shape and size.

- Personal taste.
- Occasion.
- Weather conditions.
- Cost and affordability.
- Occupation.
- Cultural practices.
- Comfort.
- Durability.
- Fabric type.
- Ease of maintenance.
- Safety requirements.

2.4.7 Clothing for Different Occasions

Occasion	Suitable clothing
School	Clean and properly worn school uniform.
Job interview	Neat formal or smart professional clothing.
Wedding	Appropriate smart, formal or cultural attire.
Sports	Comfortable sportswear and suitable footwear.
Church or religious gathering	Respectful and appropriate clothing.
Funeral	Respectful clothing appropriate to the family's and community's customs.
Casual outing	Comfortable casual wear.
Official meeting	Formal or professional clothing.
Farming activities	Durable protective clothing, boots and suitable head protection.

2.4.8 Importance of Proper Dressing

1. Promotes a neat appearance.
2. Improves self-confidence.
3. Protects the body.
4. Promotes comfort.
5. Shows respect for different occasions.
6. Supports professional identity.
7. Expresses cultural identity.
8. Promotes safety.
9. Helps individuals feel comfortable in social settings.
10. Creates positive first impressions.

2.5 NUTRITION AND HYDRATION

2.5.1 Meaning of Nutrition

Nutrition refers to the process through which the body obtains and uses nutrients from food for energy, growth, repair and maintenance of health.

Good nutrition contributes to general well-being and supports healthy skin, hair, nails and body functioning.

2.5.2 Meaning of Hydration

Hydration refers to maintaining adequate water levels in the body to support normal body functions.

Water is essential for digestion, transportation of nutrients, regulation of body temperature and removal of waste products.

2.5.3 Nutrients Important for Healthy Appearance

1. Proteins

Functions:

- Support growth and repair of body tissues.
- Provide amino acids required for building body structures.
- Contribute to the formation of hair and skin proteins.

Sources in Kenya:

- Eggs.
- Milk.
- Beans.
- Green grams.
- Fish.
- Meat.
- Groundnuts.
- Soybeans.

2. Vitamins

Vitamins are required in small quantities for normal body functioning.

Examples:

- **Vitamin A:** Supports normal skin and eye health. Sources include carrots, pumpkins, mangoes and dark green vegetables.
- **Vitamin C:** Supports collagen formation and wound healing. Sources include oranges, guavas, lemons, tomatoes and green vegetables.
- **Vitamin E:** Acts as an antioxidant. Sources include sunflower seeds, groundnuts and vegetable oils.
- **Vitamin B group:** Supports energy metabolism and normal body functions. Sources include whole grains, legumes, eggs and milk.

3. Minerals

- **Iron:** Helps in the formation of haemoglobin. Sources include liver, beans, meat and dark green leafy vegetables.
- **Zinc:** Supports normal growth, immune function and wound healing. Sources include meat, fish, eggs and legumes.
- **Calcium:** Supports strong bones and teeth. Sources include milk, yoghurt and small fish eaten with bones.
- **Selenium:** Supports antioxidant enzyme activity. Sources include fish, eggs and some nuts.

4. Healthy fats

Functions:

- Provide energy.
- Assist absorption of fat-soluble vitamins.
- Support normal cell functioning.

Sources:

- Avocados.
- Nuts.
- Seeds.
- Vegetable oils.
- Oily fish.

5. Carbohydrates

Functions:

- Provide energy for body activities.
- Support physical activity.
- Help spare protein for growth and repair.

Sources:

- Maize.
- Rice.
- Potatoes.
- Sweet potatoes.
- Bananas.
- Millet.
- Sorghum.

2.5.4 Importance of Adequate Hydration

1. Helps regulate body temperature.
2. Supports digestion.
3. Assists transportation of nutrients.
4. Supports normal kidney function.
5. Helps replace water lost through sweat.
6. Supports normal circulation.
7. Helps maintain normal physical performance.
8. Prevents dehydration.
9. Supports normal functioning of body cells.
10. Helps maintain comfortable skin and body functioning.

2.5.5 Signs of Dehydration

- Thirst.
- Dry mouth.
- Dark yellow urine.
- Reduced urination.
- Dizziness.
- Headache.
- Tiredness.
- Dryness of the mouth and lips.

Severe dehydration requires urgent medical attention.

2.5.6 Healthy Eating Habits

1. Eat a variety of foods.
2. Include fruits and vegetables in daily meals.
3. Consume adequate protein.
4. Eat whole grains and other sources of dietary fibre.
5. Drink safe drinking water regularly.
6. Reduce excessive consumption of sugary foods and drinks.
7. Avoid skipping meals unnecessarily.
8. Observe food hygiene.
9. Eat appropriate portions.
10. Maintain regular meal patterns.

2.5.7 Relationship Between Nutrition, Hydration and Personal Appearance

- Adequate protein supports the formation of hair and skin structures.
- Vitamin C supports collagen formation.
- Iron deficiency may contribute to anaemia and tiredness, which can affect general appearance.
- Adequate water intake supports normal body functioning.
- A balanced diet supports healthy growth and development.
- Nutritional deficiencies may affect hair, skin and nail health.

Important: No single food or supplement guarantees attractive skin or hair. A balanced diet and appropriate personal care are more important.

2.6 ACCESSORIES

2.6.1 Meaning of Accessories

Accessories are additional items worn or carried to complement clothing, improve appearance, serve practical purposes or express personal style.




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2.6.2 Types of Accessories

1. Jewellery

- Earrings.
- Necklaces.
- Bracelets.
- Rings.
- Brooches.

2. Head accessories

- Hats.
- Caps.
- Headbands.
- Scarves.
- Hair clips.

3. Footwear

- Shoes.
- Sandals.
- Boots.
- Slippers.

4. Bags

- Handbags.
- Backpacks.
- Briefcases.
- Travel bags.

5. Personal accessories

- Watches.
- Belts.
- Sunglasses.
- Ties.
- Wallets.

2.6.3 Factors to Consider When Choosing Accessories

1. **Occasion:** Choose accessories suitable for the event.
2. **Colour:** Select colours that complement the clothing.
3. **Cost:** Choose affordable items.
4. **Quality:** Consider durability and workmanship.
5. **Comfort:** Accessories should not cause discomfort.
6. **Safety:** Avoid sharp or dangerous accessories.
7. **Age:** Select items suitable for the wearer.
8. **Weather:** Consider weather conditions.
9. **Size:** Accessories should be proportional to the outfit and intended use.
10. **Personal preference:** Choose items that reflect individual taste.

11. **Maintenance:** Consider ease of cleaning and storage.
12. **Cultural expectations:** Respect cultural and religious practices.

2.6.4 Importance of Accessories

- Enhance personal appearance.
- Complement clothing.
- Express personality and personal style.
- Serve practical purposes.
- Provide protection from sunlight and weather.
- Help create a coordinated appearance.
- May identify professional or social roles.

2.6.5 Guidelines for Using Accessories

1. Avoid wearing too many accessories at once.
2. Match accessories appropriately with clothing.
3. Maintain cleanliness.
4. Avoid damaged jewellery.
5. Consider the occasion.
6. Store valuable accessories safely.
7. Avoid accessories that interfere with activities.
8. Observe workplace and school rules.

2.7 COSMETICS: CHOICE AND USE

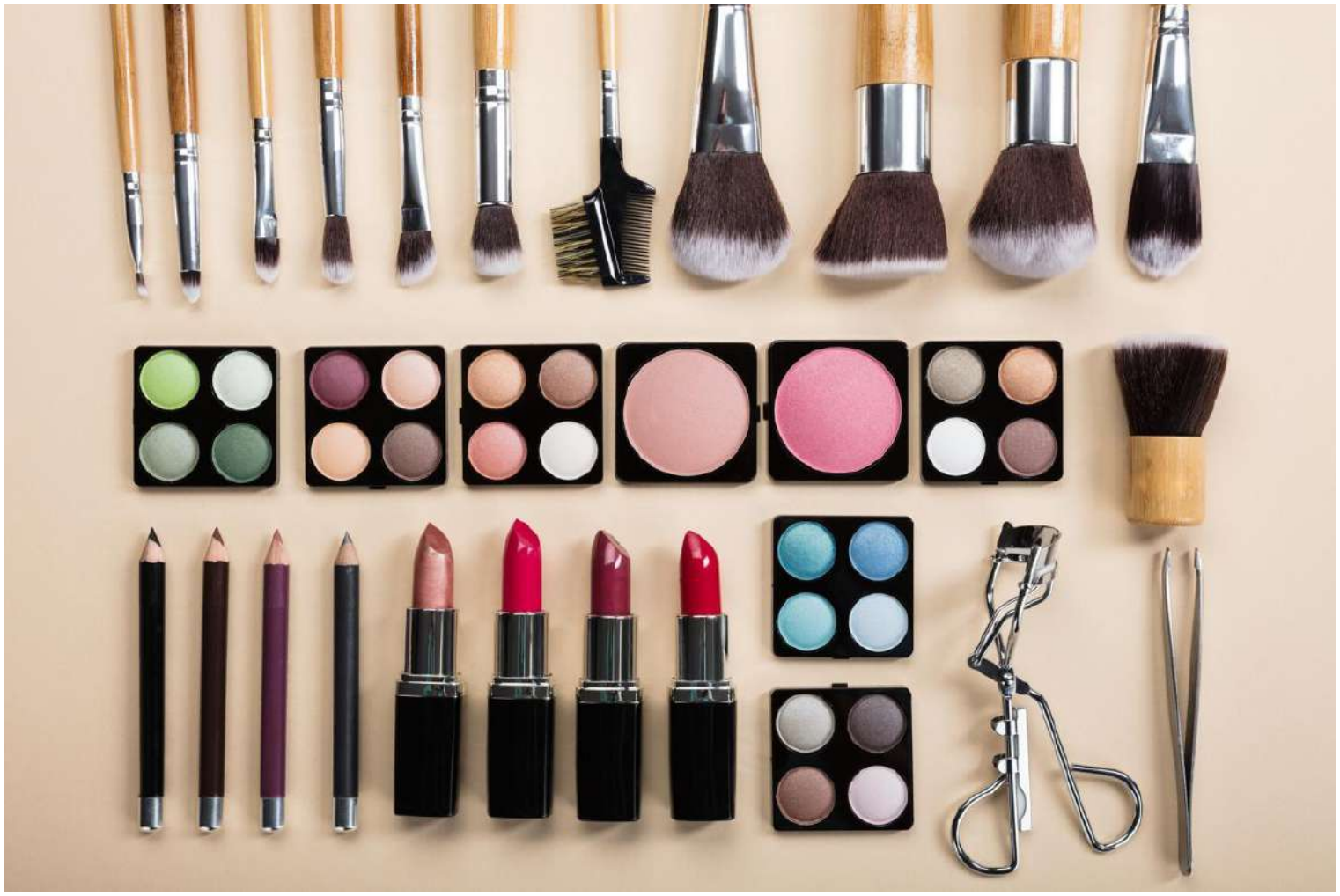
2.7.1 Meaning of Cosmetics

Cosmetics are substances or preparations applied to external parts of the human body mainly to cleanse, perfume, protect or change appearance.

Examples include:

- Face powder.
- Lipstick.
- Lip balm.
- Foundation.
- Blush.
- Mascara.
- Moisturisers.
- Deodorants.
- Nail polish.







2.7.2 Types of Cosmetics

1. Cleansing cosmetics

- Cleansing creams.
- Facial cleansers.
- Makeup removers.

Purpose: Remove dirt, excess oil and cosmetic products.

2. Moisturising cosmetics

- Body lotions.
- Face creams.
- Moisturising gels.

Purpose: Help maintain skin moisture.

3. Decorative cosmetics

- Lipsticks.
- Foundation.
- Face powder.
- Mascara.
- Eye shadow.
- Blush.

Purpose: Enhance or alter outward appearance.

4. Protective cosmetics

- Sunscreen.
- Lip balm containing sun protection.
- Protective skin creams.

Purpose: Help protect the skin against specific environmental factors.

5. Fragrances

- Perfumes.
- Body sprays.
- Eau de toilette.

Purpose: Provide a pleasant scent.

2.7.3 Factors to Consider When Choosing Cosmetics

1. **Skin type:** Products should suit the user's skin type.
2. **Skin sensitivity:** Avoid ingredients known to cause irritation.
3. **Safety:** Choose products from reputable manufacturers.

4. **Ingredients:** Check product ingredients.
5. **Expiry date:** Avoid expired cosmetics.
6. **Cost:** Choose affordable products without compromising safety.
7. **Purpose:** Select products according to their intended use.
8. **Quality:** Consider product standards and reliability.
9. **Colour:** Select suitable shades where applicable.
10. **Allergies:** Avoid ingredients that cause allergic reactions.
11. **Packaging:** Ensure containers are properly sealed and undamaged.
12. **Ease of use:** Choose products that can be applied safely and correctly.

2.7.4 Guidelines for Safe Use of Cosmetics

- Wash hands before applying cosmetics.
- Read and follow instructions.
- Check expiry dates.
- Avoid sharing personal cosmetics.
- Do not share mascara or eye makeup.
- Keep products in clean containers.
- Close containers after use.
- Remove makeup before sleeping.
- Stop using a product that causes irritation.
- Avoid applying cosmetics to injured skin.
- Store cosmetics away from excessive heat.
- Use clean brushes and applicators.

2.7.5 Dangers of Improper Use of Cosmetics

1. Skin irritation.
2. Allergic reactions.
3. Eye infections.
4. Acne aggravation.
5. Skin inflammation.
6. Chemical burns from unsafe products.
7. Contamination by microorganisms.
8. Damage caused by counterfeit or unregulated products.
9. Eye irritation from expired makeup.
10. Adverse effects from harmful skin-lightening products.

2.7.6 Importance of Appropriate Cosmetic Use

- Promotes cleanliness.
- Enhances personal appearance.
- Supports skin protection when suitable products are used.
- Improves confidence.
- Allows personal expression.
- Promotes good grooming habits.

3.0 PERSONAL HYGIENE AND GROOMING

3.1 Meaning of Personal Hygiene

Personal hygiene refers to practices undertaken to maintain cleanliness of the body and prevent the spread of disease-causing microorganisms.

Personal hygiene is an important foundation of good personal appearance.

3.2 Practices of Personal Hygiene

1. Bathing

- Bathe regularly using clean water and suitable soap.
- Pay attention to areas where sweat accumulates.
- Dry the body using a clean towel.

2. Oral hygiene

- Brush teeth at least twice daily using fluoride toothpaste.
- Clean between teeth regularly.
- Visit a dental professional when necessary.
- Maintain clean dentures where applicable.

3. Hand hygiene

- Wash hands with soap and clean running water.
- Wash before preparing or eating food.
- Wash after using the toilet.
- Wash after handling waste.
- Wash after touching animals.

4. Nail care

- Keep fingernails and toenails clean.
- Trim nails regularly.
- Avoid biting nails.
- Use clean nail-care equipment.

5. Foot care

- Wash feet regularly.
- Dry between the toes.
- Wear clean socks.
- Use suitable footwear.
- Seek treatment for persistent infections.

6. Menstrual hygiene

- Use suitable menstrual products.
- Change menstrual products regularly according to instructions and personal needs.
- Wash hands before and after changing products.
- Dispose of used products hygienically.
- Maintain privacy and dignity.

7. Clothing hygiene

- Wear clean undergarments.
- Change sweaty clothes.
- Wash clothes regularly.
- Dry clothes properly before storage.

3.3 Importance of Personal Hygiene

1. Prevents the spread of infections.
2. Reduces unpleasant body odour.
3. Promotes comfort.
4. Improves confidence.
5. Maintains healthy skin.
6. Promotes good social relationships.
7. Supports general well-being.
8. Promotes cleanliness in the home and school environment.

4.0 FACTORS TO CONSIDER WHEN PLANNING A WARDROBE

4.1 Meaning of a Wardrobe

A wardrobe refers to a collection of clothes and accessories owned by an individual for different activities, occasions and seasons.

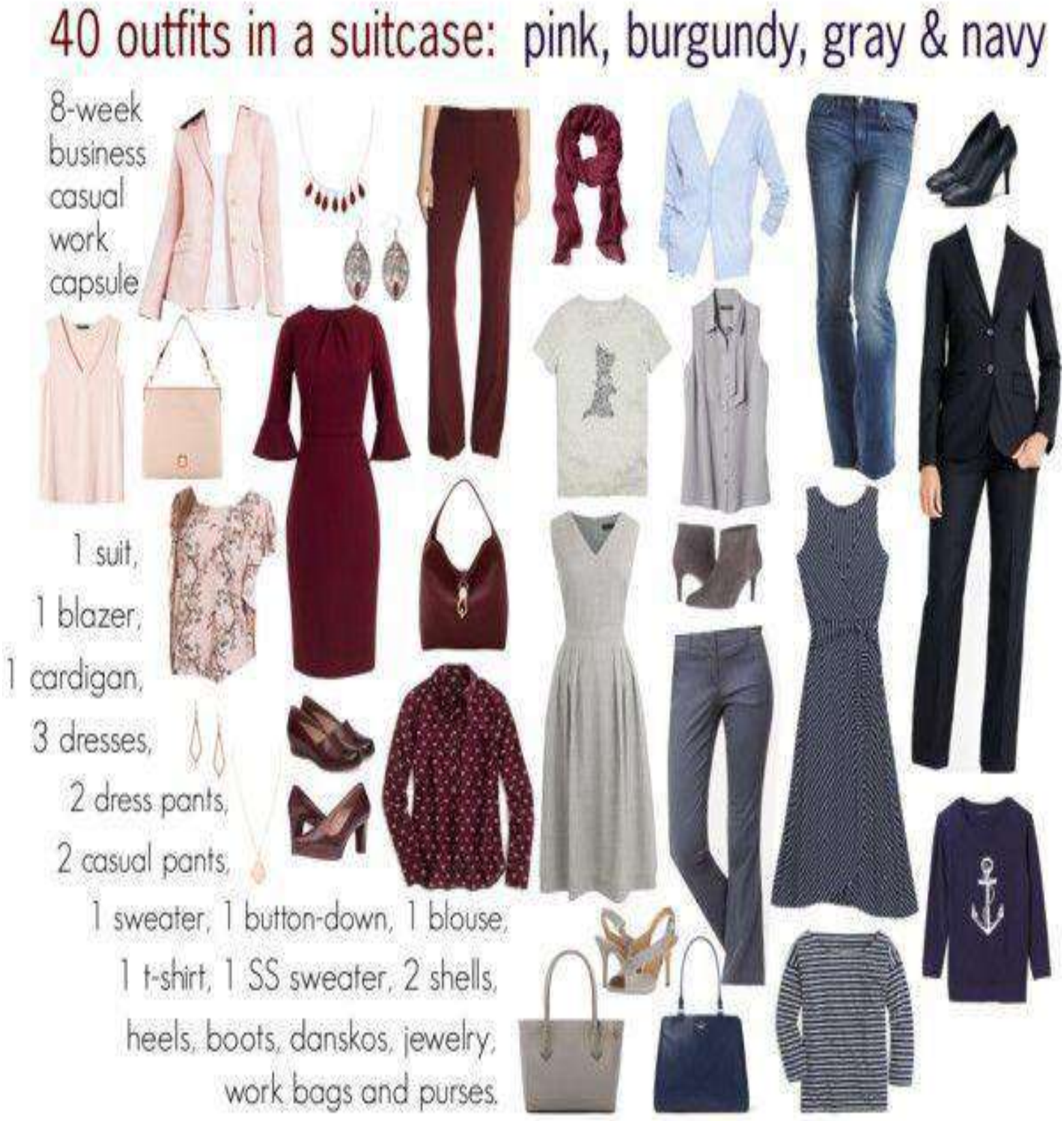
It may also refer to the furniture or storage space used for keeping clothes.

4.2 Meaning of Wardrobe Planning

Wardrobe planning is the systematic process of selecting, organising and acquiring clothing and accessories to meet an individual's clothing needs.

It involves identifying the clothes required for different activities, determining a budget and choosing garments that are suitable, versatile and affordable.




40 outfits in a suitcase: pink, burgundy, gray & navy
8-week
business
casual
work
capsule
1 suit,
1 blazer,
1 cardigan,
3 dresses,
2 dress pants,
2 casual pants,
1 sweater, 1 button-down, 1 blouse,
1 t-shirt, 1 SS sweater, 2 shells,
heels, boots, danskos, jewelry,
work bags and purses.



4.3 Factors to Consider When Planning a Wardrobe

1. Event or Occasion

The type of event determines the clothes required.

Examples:

- School requires appropriate school uniforms.
- Weddings may require formal or cultural clothing.
- Sports activities require sportswear.
- Official meetings require suitable formal wear.
- Casual outings require comfortable everyday clothing.

2. Weather and Climate

The prevailing weather determines the type and material of clothing required.

Examples:

- During cold weather in areas such as Nyahururu, warm sweaters, jackets and coats may be necessary.
- During hot weather in Mombasa, light and breathable cotton garments may be more comfortable.
- During rainy seasons, waterproof jackets, umbrellas and suitable shoes are useful.

3. Age of the Individual

Clothing needs vary with age.

Examples:

- Children require comfortable clothes that allow movement and growth.
- Teenagers require clothing suitable for school and social activities.
- Adults may require workwear and formal clothing.
- Older people may prefer comfortable garments that are easy to wear.

4. Occupation

Different occupations require different types of clothing.

Examples:

- Teachers require neat and suitable professional clothing.
- Farmers require protective clothing and boots.
- Laboratory workers require protective coats and suitable footwear.
- Construction workers require helmets, reflective jackets and safety boots.

5. Income and Budget

An individual should select clothing according to available financial resources.

Considerations:

- Cost of garments.
- Quality.
- Number of garments required.
- Maintenance costs.
- Replacement costs.

6. Body Shape and Size

Clothing should fit appropriately and provide comfort.

Consider:

- Body measurements.
- Ease of movement.
- Garment design.
- Individual preference.
- Changes in body size.

7. Personal Taste and Preference

An individual's preferences influence:

- Colour choices.
- Styles.
- Fabric types.

- Designs.
- Patterns.
- Clothing combinations.

8. Cultural and Religious Practices

Some communities have particular expectations regarding dressing.

Examples:

- Cultural attire worn during traditional ceremonies.
- Modest clothing required in some religious settings.
- Special garments worn during religious festivals.

9. Durability

Garments should withstand regular use and washing.

Durable garments reduce frequent replacement and may be more economical in the long term.

10. Versatility

Choose garments that can be combined in different ways.

For example:

- A plain shirt can be worn with trousers, a skirt or under a jacket.
- A neutral-coloured skirt can match several blouses.
- A pair of formal shoes can be used for several official occasions.

11. Fabric Type

Different fabrics have different properties.

Examples:

- Cotton is absorbent and comfortable.
- Wool provides warmth.
- Polyester is generally durable and dries relatively quickly.
- Linen is breathable but may crease easily.
- Denim is strong and commonly used for casual clothing.

12. Ease of Maintenance

Choose garments that are easy to wash, dry, iron and store according to available facilities and time.

13. Number of Activities

The individual should consider the activities they participate in regularly.

Examples:

- School.
- Work.

- Religious activities.
- Sports.
- Social events.
- Household activities.

14. Availability of Storage Space

Consider the amount of space available for storing clothing and accessories.

15. Safety

Select appropriate protective clothing for activities involving heat, chemicals, machinery or other hazards.

5.0 STEPS IN PLANNING A WARDROBE

Wardrobe planning requires careful consideration of clothing needs and available resources.

Step 1: Identify Clothing Needs

Determine the types of clothes required for daily activities and special occasions.

Step 2: Assess Existing Clothes

Examine the clothes already available.

Identify:

- Clothes that are still suitable.
- Clothes that need repair.
- Clothes that no longer fit.
- Clothes that are worn out.
- Clothes that are rarely used.

Step 3: Identify Clothing Gaps

Compare existing garments with actual clothing needs.

Identify missing items.

Step 4: Set a Budget

Determine the amount of money available for purchasing clothes.

Step 5: Select Suitable Garments

Choose garments according to:

- Occasion.
- Weather.
- Age.
- Occupation.
- Personal preference.
- Cost.

- Durability.

Step 6: Choose Suitable Accessories

Select shoes, bags, belts, jewellery and other accessories to complement the clothes.

Step 7: Purchase the Clothes

Buy suitable garments from reliable sellers.

Check:

- Quality.
- Size.
- Stitching.
- Fabric.
- Colour.
- Price.

Step 8: Organise the Wardrobe

Arrange garments appropriately.

Separate:

- School clothes.
- Work clothes.
- Casual clothes.
- Sportswear.
- Special-occasion clothes.

Step 9: Maintain the Wardrobe

Wash, repair, iron and store garments properly.

Step 10: Review the Wardrobe Regularly

Evaluate whether the wardrobe continues to meet changing needs.

6.0 EXAMPLE OF A PERSONAL WARDROBE PLAN

The following is an illustrative wardrobe plan for a Grade 11 learner in Kenya.

Clothing item	Quantity	Main purpose
School uniforms	2 sets	School activities
Casual trousers	2	Casual wear
T-shirts	4	Everyday activities
Sweaters	2	Cold weather
Formal outfit	1	Official occasions
Sportswear	2 sets	Physical activities
Warm jacket	1	Cold weather
Comfortable shoes	2 pairs	Everyday use

Sports shoes	1 pair	Sports activities
Sandals	1 pair	Casual use
Socks	5 pairs	Daily use
Belt	1	Clothing support
Raincoat	1	Rain protection

The quantities are examples and should be adjusted according to the learner's needs, school requirements and available budget.

7.0 WARDROBE MAINTENANCE AND STORAGE

7.1 Meaning of Wardrobe Maintenance

Wardrobe maintenance refers to activities undertaken to keep clothes clean, neat, functional and in good condition.

7.2 Practices of Wardrobe Maintenance

1. Wash garments according to care-label instructions.
2. Separate clothes according to colour before washing.
3. Repair torn seams and loose buttons.
4. Iron garments at suitable temperatures.
5. Dry clothes properly before storing them.
6. Fold knitwear to prevent stretching.
7. Hang garments that crease easily.
8. Store shoes in a clean, dry place.
9. Protect clothes from insects and moisture.
10. Avoid overcrowding storage spaces.

7.3 Importance of Wardrobe Maintenance

- Increases the lifespan of garments.
- Maintains neatness.
- Saves money.
- Reduces unnecessary purchases.
- Prevents unpleasant odours.
- Makes it easier to select outfits.
- Promotes personal hygiene.
- Reduces fabric damage.

8.0 PERSONAL ETIQUETTE

8.1 Meaning of Personal Etiquette

Personal etiquette refers to the rules of polite behaviour that guide an individual's conduct when interacting with others in daily life.

Good etiquette promotes respect, peaceful coexistence, effective communication and positive relationships.







8.2 Importance of Personal Etiquette

1. Promotes peaceful coexistence.
2. Builds positive relationships.
3. Shows respect for other people.
4. Improves communication.
5. Promotes self-discipline.
6. Creates a good personal impression.
7. Reduces misunderstandings.
8. Encourages cooperation.
9. Promotes responsible behaviour.
10. Supports professional development.

8.3 LANGUAGE AND COMMUNICATION ETIQUETTE

Meaning

Communication etiquette refers to the accepted rules of polite and respectful communication when interacting with other people.

Guidelines for Good Communication Etiquette

1. Use polite language.

2. Greet people appropriately.
3. Listen carefully when others speak.
4. Avoid interrupting people.
5. Use respectful words such as please, thank you and excuse me.
6. Avoid insulting or abusive language.
7. Speak clearly.
8. Maintain an appropriate tone of voice.
9. Respect different opinions.
10. Avoid spreading rumours.
11. Apologise when necessary.
12. Avoid discriminatory language.

Examples of Polite Expressions

Situation	**Appropriate expression**
Requesting assistance	Please help me.
Receiving assistance	Thank you very much.
Making a mistake	I am sorry.
Seeking permission	May I come in?
Passing through a group	Excuse me.
Greeting someone	Good morning.
Disagreeing respectfully	I understand your view, but I think differently.
Ending a conversation	It was nice speaking with you.

Importance of Communication Etiquette

- Promotes understanding.
- Reduces conflict.
- Builds trust.
- Encourages meaningful conversations.
- Shows respect.
- Promotes teamwork.
- Improves interpersonal relationships.

8.4 PUNCTUALITY

8.4.1 Meaning of Punctuality

Punctuality refers to the habit of arriving or completing activities at the agreed or expected time.

8.4.2 Importance of Punctuality

1. Demonstrates responsibility.
2. Shows respect for other people's time.
3. Promotes discipline.
4. Improves productivity.
5. Reduces unnecessary delays.
6. Builds trust.
7. Promotes effective time management.
8. Encourages professional conduct.
9. Helps activities run smoothly.
10. Reduces stress associated with lateness.

8.4.3 Ways of Practising Punctuality

- Prepare clothes and materials in advance.
- Use an alarm clock.
- Plan daily activities.
- Leave home early.
- Consider possible traffic delays.
- Avoid unnecessary distractions.
- Keep appointments.
- Complete tasks within the agreed time.

8.4.4 Consequences of Unpunctuality

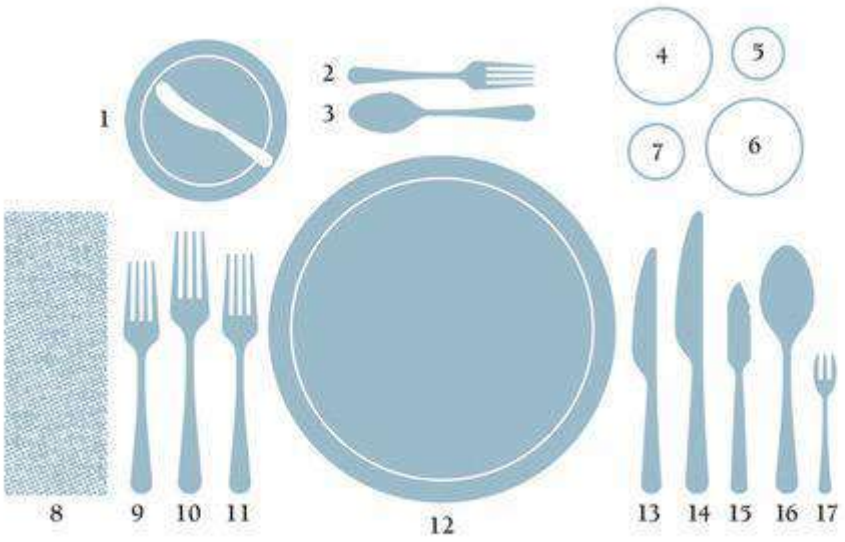
- Missed opportunities.
- Poor academic performance.
- Loss of trust.
- Delayed activities.
- Increased stress.
- Conflict with others.
- Reduced productivity.
- Poor professional reputation.

8.5 TABLE MANNERS

8.5.1 Meaning of Table Manners

Table manners refer to the accepted rules of polite behaviour observed when eating and sharing meals with other people.

Good table manners demonstrate respect, cleanliness and consideration for others.



1. Bread plate & butter knife
2. Dessert fork
3. Dessert spoon
4. Water glass / goblet
5. Sherry glass
6. Wineglass
7. Champagne glass
8. Napkin
9. Fish fork
10. Entrée fork
11. Salad fork
12. Charger/place plate
13. Salad knife
14. Entrée knife
15. Fish Knife
16. Soup spoon
17. Oyster fork

8.5.2 Guidelines for Good Table Manners

Before eating

1. Wash hands with soap and clean water.
2. Wait for everyone to be ready before beginning a shared meal where appropriate.
3. Sit properly.
4. Place the napkin appropriately.
5. Avoid touching other people's food.

During eating

1. Eat with the appropriate utensils.
2. Chew food with the mouth closed.
3. Avoid talking while chewing.
4. Do not make unnecessary eating noises.
5. Take reasonable portions.
6. Avoid reaching across other people's plates.
7. Ask politely for food to be passed.
8. Avoid playing with food.
9. Use serving utensils where provided.

10. Avoid using a mobile phone unnecessarily while sharing a meal.

After eating

1. Place used utensils appropriately.
2. Avoid leaving food scattered on the table.
3. Thank the host or person who prepared the meal.
4. Help clear the table where appropriate.
5. Wash hands when necessary.

8.5.3 Importance of Good Table Manners

- Promotes cleanliness.
- Prevents contamination.
- Shows respect for others.
- Creates a pleasant dining environment.
- Promotes self-discipline.
- Encourages social interaction.
- Prevents unnecessary embarrassment.
- Promotes positive family relationships.

8.5.4 Common Table Manners to Avoid

- Chewing with the mouth open.
- Speaking with food in the mouth.
- Eating noisily.
- Reaching across other people.
- Taking excessive food.
- Using fingers inappropriately.
- Making negative comments about food.
- Playing with utensils.
- Leaving the dining area without permission where permission is expected.

8.6 RESPECTING PERSONAL SPACE

8.6.1 Meaning of Personal Space

Personal space refers to the physical area around an individual that they regard as private or comfortable during social interactions.

8.6.2 Ways of Respecting Personal Space

1. Avoid standing too close to people.
2. Ask permission before touching another person.
3. Avoid reading another person's private messages.

4. Respect closed doors and private rooms.
5. Avoid handling other people's belongings without permission.
6. Respect individual boundaries.
7. Avoid unnecessary physical contact.
8. Observe appropriate distance during conversations.
9. Avoid staring at people.
10. Respect other people's right to privacy.

8.6.3 Importance of Respecting Personal Space

- Promotes safety.
- Shows respect.
- Builds trust.
- Prevents discomfort.
- Reduces conflict.
- Promotes positive relationships.
- Protects individual privacy.
- Encourages responsible social behaviour.

8.7 APPROPRIATE DRESSING ETIQUETTE

Meaning

Dressing etiquette refers to the accepted standards of selecting and wearing clothes appropriately for different occasions and environments.

Guidelines for Appropriate Dressing Etiquette

1. Wear clean clothes.
2. Choose clothes suitable for the occasion.
3. Observe school and workplace dress codes.
4. Avoid clothing that interferes with safety.
5. Wear suitable footwear.
6. Consider weather conditions.
7. Maintain personal cleanliness.
8. Respect cultural and religious expectations.
9. Avoid wearing damaged or excessively dirty clothes.
10. Dress comfortably and appropriately.

Importance of Dressing Etiquette

- Shows respect for an occasion.
- Promotes neatness.

- Creates a positive impression.
- Promotes safety.
- Supports professional identity.
- Encourages self-respect.
- Promotes social harmony.

8.8 PHONE ETIQUETTE

8.8.1 Meaning of Phone Etiquette

Phone etiquette refers to the accepted rules of polite and responsible behaviour when using mobile phones and other communication devices.

8.8.2 Guidelines for Good Phone Etiquette

1. Answer calls politely.
2. Introduce yourself when necessary.
3. Avoid speaking loudly in public.
4. Keep phone conversations brief in shared spaces.
5. Avoid using phones during important meetings.
6. Observe school and workplace phone policies.
7. Avoid using phones while driving.
8. Ask permission before photographing or recording someone.
9. Avoid sharing private information without consent.
10. Respond to messages appropriately.
11. Avoid sending offensive messages.
12. Avoid excessive phone use during family interactions.

8.8.3 Phone Etiquette in Digital Communication

Responsible digital communication includes:

- Avoiding cyberbullying.
- Respecting people's privacy.
- Avoiding forwarding unverified information.
- Using respectful language.
- Protecting passwords and personal information.
- Avoiding posting embarrassing pictures of others without permission.
- Avoiding offensive online comments.
- Respecting other people's time when sending messages.

8.8.4 Importance of Phone Etiquette

- Promotes respectful communication.

- Protects privacy.
- Prevents misunderstandings.
- Promotes responsible technology use.
- Reduces distractions.
- Builds positive relationships.
- Promotes digital citizenship.

9.0 ETIQUETTE IN DIFFERENT SOCIAL ENVIRONMENTS

Etiquette varies depending on the environment and people involved.

9.1 Etiquette at Home

- Greet family members.
- Respect parents, guardians and other family members.
- Assist with household duties.
- Respect other people's property.
- Observe cleanliness.
- Communicate politely.
- Avoid unnecessary arguments.
- Observe good table manners.

9.2 Etiquette at School

- Greet teachers and fellow learners.
- Arrive at school on time.
- Wear the correct uniform.
- Respect school rules.
- Listen when others are speaking.
- Keep classrooms clean.
- Avoid bullying.
- Respect school property.
- Participate responsibly in group activities.

9.3 Etiquette in Public Places

- Queue patiently.
- Avoid littering.
- Respect public property.
- Avoid unnecessary noise.
- Give priority to people who need assistance.

- Follow public safety instructions.
- Respect other people's privacy.

9.4 Etiquette at Workplaces

- Dress appropriately.
- Arrive on time.
- Respect colleagues.
- Communicate professionally.
- Complete assigned duties.
- Maintain confidentiality.
- Avoid unnecessary workplace gossip.
- Use office equipment responsibly.

9.5 Etiquette During Social Functions

- Arrive at the agreed time.
- Dress appropriately.
- Greet the hosts.
- Respect other guests.
- Avoid dominating conversations.
- Observe appropriate dining manners.
- Thank the hosts before leaving.

10.0 IMPORTANCE OF PERSONAL APPEARANCE AND ETIQUETTE IN DAILY LIFE

Personal appearance and etiquette contribute to individual development and social well-being.

10.1 Personal Benefits

1. Promote self-confidence.
2. Improve self-esteem.
3. Encourage personal discipline.
4. Promote cleanliness.
5. Improve personal comfort.
6. Encourage responsible decision-making.

10.2 Social Benefits

1. Promote peaceful relationships.
2. Encourage mutual respect.
3. Reduce misunderstandings.
4. Promote cooperation.

5. Improve communication.
6. Encourage social acceptance.

10.3 Academic and Professional Benefits

1. Promote a positive learning environment.
2. Encourage punctuality.
3. Improve teamwork.
4. Promote professional conduct.
5. Improve presentation skills.
6. Prepare learners for employment and entrepreneurship.

10.4 Health Benefits

1. Promote personal hygiene.
2. Reduce the risk of some infections.
3. Encourage healthy eating.
4. Promote adequate hydration.
5. Encourage appropriate skin and hair care.
6. Support physical comfort.

11.0 PRACTICAL LEARNING ACTIVITIES

The following activities can be conducted by Grade 11 learners to develop practical competencies.

Activity 1: Demonstrating Skin and Hair Care

Requirements:

- Clean water.
- Mild cleanser.
- Clean towels.
- Suitable moisturiser.
- Hair comb.
- Shampoo.
- Conditioner.

Procedure:

1. Identify different skin types.
2. Demonstrate appropriate facial cleansing.
3. Demonstrate safe moisturising.
4. Demonstrate proper hair washing.
5. Demonstrate gentle detangling.

6. Discuss safe grooming practices.

Expected learning outcomes:

- Ability to identify appropriate personal-care practices.
- Ability to select suitable grooming materials.
- Ability to demonstrate safe personal hygiene.

Activity 2: Planning a Wardrobe

Requirements:

- Pictures of different garments.
- Newspapers and magazines.
- Drawing paper.
- Pencils.
- Ruler.
- Price lists.

Procedure:

1. Identify a person's clothing needs.
2. Consider age, occupation and weather.
3. Select suitable garments.
4. Prepare a clothing budget.
5. Draw or arrange the selected garments.
6. Present the wardrobe plan to the class.

Expected learning outcomes:

- Ability to plan a functional wardrobe.
- Ability to make responsible purchasing decisions.
- Ability to manage limited resources.

Activity 3: Role-Playing Personal Etiquette

Learners should form groups and simulate:

1. Greeting a visitor.
2. Answering a telephone call.
3. Attending a formal meeting.
4. Sharing a meal.
5. Asking for assistance.
6. Respecting personal space.
7. Arriving for an appointment.

8. Participating in a group discussion.

Expected learning outcomes:

- Effective communication.
- Respect for others.
- Cooperation.
- Self-confidence.
- Responsible social behaviour.

Activity 4: Designing Posters

Learners should design posters showing:

- Importance of personal hygiene.
- Proper skin and hair care.
- Good posture.
- Appropriate dressing.
- Good table manners.
- Phone etiquette.
- Importance of punctuality.

Posters should be displayed in the Home Science classroom.

PART II: GRADE 11 HOME SCIENCE REVISION QUESTIONS

SECTION A: 30 MARKS

Instructions:

1. Answer ALL questions.
2. Choose the correct answer from the four alternatives provided.
3. Each question carries one mark.

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

1. Which of the following best describes personal appearance?

A. The way an individual communicates with others.

B. The way an individual looks and presents themselves.

C. The process of preparing food for consumption.

D. The ability to manage household finances.

2. The outermost layer of the skin is known as the

A. Dermis.

B. Hypodermis.

C. Epidermis.

D. Subcutaneous layer.

3. Which component of the skin is responsible for producing sweat?

A. Hair shaft.

B. Sweat gland.

C. Epidermis.

D. Sebaceous gland.

4. Which of the following is the most appropriate practice for maintaining healthy skin?

A. Using harsh soaps frequently.

B. Sharing facial towels.

C. Applying unknown chemicals.

D. Cleansing gently and moisturising appropriately.

5. A learner has oily skin. Which practice would be most suitable?

A. Scrubbing the face aggressively.

B. Using suitable gentle cleansing products.

C. Applying excessive heavy oils.

D. Avoiding all forms of cleansing.

6. Which part of the hair gives it most of its strength and elasticity?

A. Cuticle.

B. Medulla.

C. Cortex.

D. Hair follicle.

7. Which of the following practices helps reduce hair breakage?

A. Combing aggressively.

B. Using excessive heat.

C. Detangling gently.

D. Keeping hair tightly braided at all times.

8. The outermost layer of a hair strand is known as the

A. Cortex.

B. Cuticle.

C. Medulla.

D. Root.

9. Which of the following is an example of positive body language?

A. Rolling the eyes.

B. Looking away continuously.

C. Nodding appropriately during a conversation.

D. Pointing fingers aggressively.

10. Good posture when standing involves

A. Bending the neck excessively.

B. Distributing body weight evenly on both feet.

C. Locking the knees continuously.

D. Slouching the shoulders.

11. Which of the following is a function of clothing?

A. Preventing all diseases.

B. Replacing a balanced diet.

C. Protecting the body from environmental conditions.

D. Eliminating the need for personal hygiene.

12. A learner attending a formal interview should preferably wear

A. Dirty casual clothes.

B. Appropriate neat formal clothing.

C. Torn sportswear.

D. Sleeping clothes.

13. Which of the following is an example of protective clothing?

A. Party dress.

B. Casual T-shirt.

C. Laboratory coat.

D. Fashion necklace.

14. Which fibre is commonly associated with warmth?

A. Wool.

B. Linen.

C. Cotton.

D. Rayon.

15. Which nutrient is particularly important for collagen formation?

A. Vitamin C.

B. Vitamin D.

C. Vitamin K.

D. Vitamin B12.

16. Which of the following foods is a good source of protein?

A. Sugar.

B. Beans.

C. Cooking oil.

D. Salt.

17. Which of the following is an important function of water in the body?

A. Replacing all nutrients.

B. Regulating body temperature.

C. Producing all body hormones.

D. Preventing the need for food.

18. Which mineral is essential for the formation of haemoglobin?

A. Calcium.

B. Iron.

C. Sodium.

D. Iodine.

19. Which of the following is an example of a personal accessory?

A. Cooking pot.

B. Wristwatch.

C. School desk.

D. Water tank.

20. Which factor should be considered when selecting accessories?

A. Their ability to cause discomfort.

B. Their suitability for the occasion.

C. Their unnecessary weight.

D. Their inability to match clothing.

21. Which of the following is a decorative cosmetic?

A. Lipstick.

B. Washing powder.

C. Cooking oil.

D. Dishwashing liquid.

22. Why should cosmetics be checked for expiry dates?

A. To make them more expensive.

B. To ensure they are suitable for continued use.

C. To change their colour.

D. To improve their packaging.

23. Which practice is recommended when using mascara?

A. Sharing it with friends.

B. Keeping it open.

C. Using a personal applicator.

D. Adding water to an old product.

24. Which of the following best defines wardrobe planning?

A. Buying clothes without considering needs.

B. Organising clothing to meet different needs and occasions.

C. Wearing the same clothes every day.

D. Disposing of all old clothes.

25. A farmer planning a wardrobe for agricultural activities should prioritise

A. Party dresses.

B. Protective clothing and suitable boots.

C. Expensive jewellery.

D. Formal suits only.

26. Which factor is particularly important when choosing clothes for a cold environment?

A. Fabric warmth.

B. Colour only.

C. Fashion trends only.

D. Garment price only.

27. Punctuality refers to

A. Arriving at any time.

B. Completing activities at the expected time.

C. Avoiding appointments.

D. Delaying activities deliberately.

28. Which of the following demonstrates good table manners?

A. Speaking while chewing.

B. Reaching across other people's plates.

C. Chewing with the mouth closed.

D. Playing with food.

29. Respecting personal space involves

A. Reading other people's private messages.

B. Touching people without permission.

C. Maintaining appropriate physical distance.

D. Standing unnecessarily close to others.

30. Which of the following demonstrates proper phone etiquette?

A. Using a phone during every conversation.

B. Speaking loudly in public.

C. Asking permission before recording another person.

D. Sharing other people's private information.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

50 MARKS

Instructions:

1. Answer ALL questions.
2. Write your answers clearly.
3. Observe the marks allocated to each question.

QUESTION 1: SKIN CARE (8 MARKS)

a) Define the term skin care. (2 marks)

b) State three functions of the skin. (3 marks)

c) Explain three practices that promote healthy skin. (3 marks)

QUESTION 2: HAIR CARE (8 MARKS)

a) Identify the three main layers of a hair strand. (3 marks)

b) Explain three factors to consider when selecting a suitable hairstyle. (3 marks)

c) State two benefits of proper hair care. (2 marks)

QUESTION 3: BODY LANGUAGE AND POSTURE (8 MARKS)

a) Differentiate between body language and posture. (2 marks)

b) Explain three characteristics of good posture. (3 marks)

c) State three ways through which an individual can demonstrate positive body language. (3 marks)

QUESTION 4: CLOTHING AND WARDROBE PLANNING (10 MARKS)

a) Define the term wardrobe planning. (2 marks)

b) Explain four factors to consider when planning a personal wardrobe. (4 marks)

c) State four steps followed when planning a wardrobe. (4 marks)

QUESTION 5: NUTRITION, ACCESSORIES AND COSMETICS (8 MARKS)

a) State two nutrients that support healthy skin and hair. (2 marks)

b) Explain two factors to consider when choosing personal accessories. (2 marks)

c) State four precautions to observe when using cosmetics. (4 marks)

QUESTION 6: PERSONAL ETIQUETTE (8 MARKS)

a) Define personal etiquette. (2 marks)

b) Explain three guidelines for observing good table manners. (3 marks)

c) State three benefits of practising punctuality in daily life. (3 marks)

PART III: ANSWER KEY AND MARKING SCHEME

SECTION A: MULTIPLE-CHOICE ANSWERS

Question	Answer	Question	Answer
1	B	16	B
2	C	17	B
3	B	18	B
4	D	19	B
5	B	20	B
6	C	21	A
7	C	22	B
8	B	23	C
9	C	24	B
10	B	25	B
11	C	26	A
12	B	27	B
13	C	28	C
14	A	29	C
15	A	30	C

SECTION B: SUGGESTED MARKING SCHEME

QUESTION 1: SKIN CARE (8 MARKS)

a) Skin care refers to practices undertaken to maintain healthy, clean, protected and attractive skin. (2 marks)

b) Functions of the skin:

- Protection against injury and microorganisms.
- Regulation of body temperature.
- Sensation of touch, pain, pressure and temperature.
- Excretion of small quantities of waste through sweat.
- Production of vitamin D.
- Prevention of excessive water loss.

Award any three well-stated points. (3 × 1 = 3 marks)

c) Practices that promote healthy skin:

- Cleansing gently to remove dirt, sweat and excess oil.
- Moisturising to maintain the skin barrier.
- Applying sunscreen to protect against ultraviolet radiation.
- Eating a balanced diet to supply essential nutrients.
- Drinking adequate safe water.
- Avoiding harsh or harmful chemicals.

Award any three well-explained points. (3 × 1 = 3 marks)

QUESTION 2: HAIR CARE (8 MARKS)

a) Layers of hair:

1. Cuticle.
2. Cortex.
3. Medulla.

(3 × 1 = 3 marks)

b) Factors to consider when selecting a hairstyle:

- Face shape: Choose a hairstyle that complements facial features.
- Hair texture: Consider the natural texture and characteristics of hair.
- Occasion: Select a style appropriate for the event.
- Cost: Consider affordability and maintenance expenses.
- Occupation: Consider professional or school requirements.
- Age: Select a suitable style for the individual.
- Hair health: Avoid styles that cause excessive tension.

Award any three explained points. (3 × 1 = 3 marks)

c) Benefits of proper hair care:

- Maintains cleanliness of the scalp.
- Reduces hair breakage.
- Improves hair manageability.
- Enhances personal appearance.
- Promotes confidence.

Award any two. (2 × 1 = 2 marks)

QUESTION 3: BODY LANGUAGE AND POSTURE (8 MARKS)

a)

- Body language is non-verbal communication through facial expressions, gestures, eye contact and movements. (1 mark)
- Posture is the way an individual positions their body when standing, sitting or moving. (1 mark)

b) Characteristics of good posture:

- Head held upright.
- Shoulders relaxed.
- Back maintained in a natural position.
- Body weight distributed evenly when standing.
- Feet properly supported when sitting.

Award any three. (3 × 1 = 3 marks)

c) Ways of demonstrating positive body language:

- Maintaining natural eye contact.

- Smiling appropriately.
- Nodding to show attentiveness.
- Facing the speaker.
- Using appropriate gestures.
- Maintaining a relaxed body position.

Award any three. (3 × 1 = 3 marks)

QUESTION 4: CLOTHING AND WARDROBE PLANNING (10 MARKS)

a) Wardrobe planning is the systematic process of selecting, organising and acquiring clothes and accessories to meet an individual's clothing needs. (2 marks)

b) Factors to consider:

- Occasion: Clothes should suit the activity or event.
- Weather: Choose garments suitable for prevailing temperatures and conditions.
- Age: Clothing should suit the individual's age and needs.
- Occupation: Select garments suitable for professional activities.
- Budget: Consider available financial resources.
- Durability: Choose garments that withstand regular use.
- Comfort: Clothes should allow easy movement.
- Personal preference: Consider individual taste.

Award any four explained points. (4 × 1 = 4 marks)

c) Steps followed when planning a wardrobe:

1. Identify clothing needs.
2. Assess existing garments.
3. Identify clothing gaps.
4. Set a budget.
5. Select suitable garments.
6. Choose appropriate accessories.
7. Purchase the garments.
8. Organise the wardrobe.
9. Maintain the garments.
10. Review the wardrobe regularly.

Award any four. (4 × 1 = 4 marks)

QUESTION 5: NUTRITION, ACCESSORIES AND COSMETICS (8 MARKS)

a) Nutrients:

- Protein.

- Vitamin C.
- Vitamin A.
- Vitamin E.
- Zinc.
- Iron.
- Healthy fats.

Award any two. (2 × 1 = 2 marks)

b) Factors to consider when choosing accessories:

- Occasion: Accessories should suit the event.
- Cost: Select affordable accessories.
- Quality: Choose durable products.
- Comfort: Accessories should not cause discomfort.
- Colour: Match accessories with clothing.
- Safety: Avoid dangerous or unsuitable accessories.

Award any two explained points. (2 × 1 = 2 marks)

c) Precautions when using cosmetics:

- Check expiry dates.
- Avoid sharing personal cosmetics.
- Wash hands before application.
- Use clean applicators.
- Read product instructions.
- Stop using products that cause irritation.
- Store cosmetics appropriately.
- Avoid unregulated products.

Award any four. (4 × 1 = 4 marks)

QUESTION 6: PERSONAL ETIQUETTE (8 MARKS)

a) Personal etiquette refers to accepted rules of polite behaviour that guide an individual's conduct when interacting with others. (2 marks)

b) Guidelines for good table manners:

- Wash hands before eating to maintain hygiene.
- Chew food with the mouth closed to avoid disturbing others.
- Avoid speaking while chewing.
- Use appropriate utensils.
- Avoid reaching across other people's plates.

- Ask politely for food to be passed.
- Take reasonable portions.
- Thank the host after the meal.

Award any three. (3 × 1 = 3 marks)

c) Benefits of punctuality:

- Demonstrates responsibility.
- Shows respect for other people's time.
- Improves productivity.
- Promotes discipline.
- Builds trust.
- Reduces unnecessary delays.
- Helps activities run smoothly.

Award any three. (3 × 1 = 3 marks)

PART IV: TEACHER'S ASSESSMENT AND REFLECTION

Assessment area	**Suggested evidence**
Knowledge and understanding	Oral questions and written exercises.
Practical skills	Demonstration of skin and hair care.
Creativity	Wardrobe planning and poster design.
Communication	Group presentations and role-play.
Collaboration	Participation in group activities.
Values	Respect, responsibility and self-discipline.
Digital literacy	Appropriate online research.

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.2: TIME AND ENERGY MANAGEMENT

1.0 INTRODUCTION TO TIME AND ENERGY MANAGEMENT

Time and energy are important resources in everyday life. Every household activity requires time, physical effort, mental effort or a combination of these resources.

Activities such as cooking, cleaning, washing clothes, shopping, caring for children, studying and maintaining the home require proper organisation to ensure that they are completed efficiently.

Effective time and energy management enables individuals and families to accomplish their daily responsibilities without unnecessary delays, fatigue or wastage of resources.

1.1 Meaning of Time

Time refers to the continuous progression of events from the past, through the present, to the future. It is a resource that allows people to organise and carry out activities within specific periods.

In Home Science, time refers to the period allocated to carrying out household activities such as preparing meals, cleaning, laundry and childcare.

Examples of time use in a Kenyan household:

- A learner allocates 30 minutes to prepare breakfast before going to school.
- A parent spends one hour preparing lunch for the family.
- A family allocates Saturday morning to cleaning the house.
- A household member sets aside 20 minutes to organise groceries.

1.2 Meaning of Energy

Energy refers to the capacity or ability to do work or perform an activity.

In Home Science, energy refers to the physical and mental effort used when performing household activities.

Energy is required when:

- Sweeping and mopping floors.
- Washing and ironing clothes.
- Preparing and cooking meals.
- Carrying water and shopping.
- Organising household items.
- Planning meals and managing household resources.

Example:

When preparing a traditional Kenyan meal such as ugali, sukuma wiki and beans, a person uses physical energy when washing vegetables, chopping ingredients, stirring ugali and washing cooking utensils. Mental energy is also required when deciding the cooking sequence and monitoring the food.

1.3 Meaning of Time and Energy Management

Time and energy management refers to the process of planning, organising, allocating and using available time and energy effectively to accomplish activities and achieve desired results with minimum wastage, unnecessary effort and fatigue.

It involves deciding:

- What activities need to be done.
- When each activity should be performed.
- How long each activity should take.
- Which activities should be performed first.
- How to reduce unnecessary physical and mental effort.
- How to combine activities where appropriate.

2.0 ASPECTS OF MANAGING TIME AND ENERGY

Effective management of time and energy involves several important aspects. These aspects help individuals organise household activities, avoid unnecessary work and achieve better results.

The main aspects include:

1. Planning.
2. Prioritising.
3. Goal setting.
4. Breaking down tasks.
5. Time blocking.
6. Dovetailing activities.

2.1 Planning

Meaning of planning

Planning refers to the process of deciding in advance what activities should be carried out, when they should be performed, how they should be done and the resources required.

In Home Science, planning involves organising household activities in a logical order to ensure that available time and energy are used effectively.

Importance of planning household activities

1. **Promotes proper organisation:** Planning helps arrange household activities in an orderly manner, making it easier to complete daily responsibilities.

2. **Saves time:** Activities are organised beforehand, reducing unnecessary delays and confusion.

3. **Reduces fatigue:** Planning helps prevent unnecessary movement and repetition of tasks.

4. **Promotes efficiency:** Household activities are performed systematically, resulting in better outcomes.

5. **Prevents forgetting important tasks:** A written plan acts as a reminder of activities that need attention.

6. **Promotes accountability:** Each household member can be assigned specific responsibilities.

7. **Facilitates resource management:** Planning helps determine the materials, equipment, money and labour needed.

8. **Reduces stress:** Knowing what needs to be done and when to do it makes household management easier.

9. **Improves coordination:** Family members can work together without interfering with one another.

10. **Promotes work-life balance:** Planning creates room for household duties, education, recreation and rest.

Steps involved in planning household activities

1. Identify all the activities that need to be performed.
2. Determine the objectives of each activity.
3. Identify the resources required.
4. Estimate the time needed for each activity.
5. Determine the order in which activities should be performed.
6. Allocate responsibilities to different household members.
7. Prepare a timetable or work schedule.
8. Implement the plan.
9. Evaluate the results and make necessary adjustments.

Example of planning a family lunch

A person planning to prepare rice, beef stew and cabbage may:

- Check the ingredients available.
- Identify missing ingredients.
- Purchase the required food items.
- Wash and prepare the ingredients.
- Begin cooking the food that takes the longest.
- Prepare other dishes while the first dish cooks safely.
- Arrange the table before serving.

2.2 Prioritising

Meaning of prioritising

Prioritising refers to the process of arranging activities according to their importance, urgency and expected consequences.

It involves deciding which tasks should be completed first, which can be done later and which can be postponed or delegated.

In household management, some activities require immediate attention while others can wait.

Categories of household activities according to priority

A. Urgent and important activities

These are activities that require immediate attention because delaying them may cause serious problems.

Examples:

- Preparing meals for young children.
- Attending to a sick family member.
- Switching off an electrical appliance that has been left on.

- Cleaning a spilled liquid to prevent accidents.
- Providing immediate care to an injured person.

B. Important but not urgent activities

These are activities that contribute to long-term household wellbeing but do not necessarily require immediate attention.

Examples:

- Preparing a weekly meal plan.
- Organising household finances.
- Maintaining kitchen equipment.
- Planning a family shopping budget.
- Deep cleaning storage areas.

C. Urgent but less important activities

These activities may require quick attention but can sometimes be delegated to another household member.

Examples:

- Answering a routine delivery call.
- Collecting a non-essential parcel.
- Responding to a minor household request while preparing an important meal.

D. Neither urgent nor important activities

These activities can be postponed or reduced because they contribute little to immediate household goals.

Examples:

- Unnecessary browsing on social media during working hours.
- Repeatedly rearranging already organised items.
- Watching television when important household tasks remain unfinished.

Importance of prioritising

1. Ensures important household activities are completed first.
2. Prevents unnecessary delays.
3. Reduces stress and pressure.
4. Helps individuals meet deadlines.
5. Promotes efficient use of energy.
6. Prevents neglect of essential family needs.
7. Improves decision-making.
8. Allows flexibility when unexpected situations arise.

2.3 Goal Setting

Meaning of goal setting

Goal setting refers to the process of identifying specific results that an individual intends to achieve within a given period.

In Home Science, goal setting involves determining what should be accomplished when carrying out household activities.

Goals provide direction and help individuals remain focused.

Types of goals in household management

1. Short-term goals

These are goals that can be achieved within a short period, such as a few hours, days or weeks.

Examples:

- Preparing breakfast within 30 minutes.
- Washing school uniforms before Monday.
- Organising the kitchen by the end of the day.
- Completing household cleaning on Saturday.

2. Long-term goals

These are goals that require a longer period to achieve, such as several months or years.

Examples:

- Establishing an organised household routine.
- Saving money to purchase energy-efficient household appliances.
- Maintaining a clean and healthy home throughout the year.
- Developing a sustainable family meal-planning routine.

Characteristics of effective goals

Effective goals should follow the SMART principle.

Letter	Meaning	Explanation
S	Specific	The goal should be clear.
M	Measurable	Progress should be measurable.
A	Achievable	The goal should be realistic.
R	Relevant	The goal should relate to the intended need.
T	Time-bound	The goal should have a deadline.

Example of a SMART household goal:

"I will organise and clean the kitchen within one hour every Saturday morning."

This goal is:

- Specific because it identifies the kitchen cleaning activity.
- Measurable because completion can be checked.

- Achievable because one hour may be sufficient for the planned work.
- Relevant because cleanliness promotes household hygiene.
- Time-bound because it specifies Saturday morning and one hour.

Importance of goal setting

1. Provides direction when carrying out household activities.
2. Encourages commitment and responsibility.
3. Helps individuals monitor their progress.
4. Promotes proper allocation of time.
5. Reduces unnecessary activities.
6. Motivates individuals to complete tasks.
7. Makes evaluation of performance easier.

2.4 Breaking Down Tasks

Meaning of breaking down tasks

Breaking down tasks refers to dividing a large or complicated activity into smaller, manageable steps that can be performed systematically.

It helps individuals handle demanding household activities without feeling overwhelmed.

Examples of breaking down household tasks

Example 1: Cleaning a house

Instead of attempting to clean the entire house at once, the activity can be divided into:

1. Collecting cleaning materials.
2. Opening windows for ventilation.
3. Removing waste and unnecessary items.
4. Dusting furniture.
5. Sweeping floors.
6. Cleaning surfaces.
7. Mopping floors.
8. Arranging furniture.
9. Returning cleaning materials to storage.

Example 2: Preparing a family meal

Preparing a meal of rice, beans and vegetables can be broken down into:

1. Checking available ingredients.
2. Selecting cooking equipment.
3. Washing hands and food items.
4. Sorting and preparing ingredients.

5. Cooking beans.
6. Preparing and cooking rice.
7. Preparing vegetables.
8. Serving the food.
9. Cleaning the cooking area.

Importance of breaking down tasks

1. Makes complicated activities easier to perform.
2. Reduces mental pressure.
3. Promotes systematic working.
4. Helps identify the resources needed at each stage.
5. Makes it easier to allocate responsibilities.
6. Helps monitor progress.
7. Reduces mistakes and omissions.
8. Makes time estimation easier.

2.5 Time Blocking

Meaning of time blocking

Time blocking refers to the practice of dividing available time into specific periods and assigning particular activities to each period.

Each activity is given a defined starting and finishing time.

Time blocking helps individuals remain focused and avoid spending too much time on one activity at the expense of others.

Example of time blocking in household management

Time	Activity
5:30–5:45 a.m.	Waking up and personal hygiene
5:45–6:15 a.m.	Preparing breakfast
6:15–6:35 a.m.	Eating breakfast
6:35–6:50 a.m.	Washing utensils and tidying kitchen
6:50–7:10 a.m.	Preparing for the day

Types of time blocks

1. **Work blocks:** Periods set aside for specific household responsibilities such as cooking and cleaning.
2. **Study blocks:** Periods reserved for academic work and revision.
3. **Rest blocks:** Periods allocated for relaxation and recovery.
4. **Personal care blocks:** Periods set aside for bathing, dressing and personal hygiene.

5. **Family time blocks:** Periods reserved for interaction and family activities.
6. **Buffer blocks:** Extra periods set aside to accommodate unexpected delays or interruptions.

Importance of time blocking

- Promotes concentration.
- Reduces procrastination.
- Prevents unnecessary interruptions.
- Encourages discipline.
- Makes daily routines predictable.
- Provides time for rest and recreation.
- Helps individuals complete activities within the planned period.

2.6 Dovetailing Activities

Meaning of dovetailing

Dovetailing refers to the practice of combining or overlapping two or more compatible activities so that time and energy are used more efficiently.

It involves performing one activity while another activity is taking place, provided that the activities can be safely combined without reducing the quality of the work.

Dovetailing is particularly useful in household management because many domestic activities involve waiting periods.

Examples of dovetailing in Home Science

1. Soaking beans while preparing vegetables for cooking.
2. Washing utensils while food is safely simmering.
3. Folding clean laundry while listening to an educational programme.
4. Preparing a shopping list while checking household food supplies.
5. Setting the dining table while cooked food is being kept warm safely.
6. Preparing vegetables while water is heating in a separate suitable appliance.
7. Organising kitchen shelves while waiting for washed clothes to complete a machine cycle.

Advantages of dovetailing

1. Saves time by reducing idle periods.
2. Reduces unnecessary waiting.
3. Improves household productivity.
4. Helps complete several compatible activities within a shorter period.
5. Reduces unnecessary movement.
6. Makes better use of available time.
7. Promotes efficient organisation of household work.

Precautions when dovetailing activities

Dovetailing should be done carefully to prevent accidents and poor-quality work.

1. Avoid combining activities that require intense concentration at the same time.
2. Never leave cooking food unattended when this creates a fire or burning risk.
3. Avoid handling electrical appliances with wet hands.
4. Do not combine activities that may cause cross-contamination when handling food.
5. Ensure that children are supervised appropriately.
6. Avoid rushing activities merely to save time.
7. Ensure that each activity is completed to the required standard.

Important distinction:

Dovetailing does not mean doing many activities carelessly at once. It means combining compatible activities safely and efficiently.

3.0 ENERGY MANAGEMENT IN HOUSEHOLD ACTIVITIES

3.1 Meaning of Energy Management

Energy management refers to the process of organising and using physical and mental effort efficiently when performing activities to minimise fatigue, prevent wastage of effort and achieve desired results.

In Home Science, energy management involves selecting appropriate working methods, equipment, body movements and work arrangements to reduce unnecessary effort when carrying out household activities.

For example, when washing clothes, a person can reduce physical effort by sorting clothes before washing, soaking heavily soiled clothes and using an appropriate washing machine where available.

3.2 Types of Energy Used in Household Activities

A. Physical energy

Physical energy refers to the effort used by the muscles and body when performing activities.

Examples include:

- Sweeping and mopping floors.
- Carrying water from a water source.
- Washing clothes by hand.
- Kneading dough.
- Digging kitchen gardens.
- Carrying shopping bags.
- Moving household furniture.

B. Mental energy

Mental energy refers to the intellectual effort used when thinking, reasoning, making decisions, planning and solving problems.

Examples include:

- Preparing a household budget.
- Planning balanced family meals.
- Organising a shopping list.
- Deciding which household activity should be done first.
- Calculating ingredient quantities.
- Solving problems arising during household activities.

C. Emotional energy

Emotional energy refers to the psychological effort required to manage feelings, relationships, responsibilities and stressful situations when performing daily activities.

Examples include:

- Remaining patient when caring for young children.
- Managing disagreements among family members.
- Maintaining a positive attitude when household work is demanding.
- Coping with unexpected changes in household routines.

3.3 Factors That Affect Energy Use in Household Activities

The amount of energy required to perform household activities depends on several factors.

1. **Nature of the activity:** Heavy activities such as carrying water require more physical energy than arranging utensils.

2. **Working posture:** Bending, twisting or standing for long periods increases fatigue. Maintaining correct posture reduces unnecessary strain.

3. **Working methods:** Using appropriate techniques reduces the amount of effort required.

4. **Availability of equipment:** Suitable equipment such as washing machines, trolleys and vacuum cleaners can reduce physical effort.

5. **Physical fitness:** Individuals with good physical fitness may perform demanding activities with less fatigue.

6. **Health condition:** Illness, injury and physical limitations may affect the amount of energy available.

7. **Working environment:** Poor ventilation, excessive heat, inadequate lighting and congestion may increase fatigue.

8. **Organisation of the workspace:** Poor arrangement of equipment causes unnecessary movements.

9. **Experience and skills:** Experienced individuals often perform household activities more efficiently.

10. **Nutrition and hydration:** Adequate food and water support normal body functioning and energy levels.

11. **Rest and sleep:** Adequate sleep and rest help restore energy.

12. **Emotional condition:** Stress, anxiety and frustration can affect concentration and energy levels.

3.4 Methods of Conserving Energy When Performing Household Activities

Energy conservation means reducing unnecessary effort while maintaining the required standard of work.

The following methods can be used:

1. Organising the working area

- Arrange frequently used equipment within easy reach.
- Keep cleaning materials together.
- Avoid overcrowding working spaces.
- Store heavy items at convenient heights where safe.

Explanation: A well-organised working area reduces unnecessary walking, stretching and searching for equipment.

2. Using appropriate equipment

- Use a washing machine where available.
- Use a trolley to transport heavy household items.
- Use a suitable chopping board when preparing vegetables.
- Use long-handled cleaning tools where appropriate.

Explanation: Appropriate equipment reduces physical strain and improves efficiency.

3. Maintaining correct posture

- Keep the back reasonably straight when lifting objects.
- Bend the knees when lifting heavy objects.
- Avoid unnecessary twisting of the body.
- Use a stable standing position.
- Alternate between sitting and standing activities where appropriate.

Explanation: Proper posture reduces muscle strain and helps prevent injuries.

4. Working systematically

- Arrange tasks in a logical sequence.
- Complete similar activities together.
- Avoid repeating completed work.
- Prepare all required materials before starting.

Explanation: Systematic working prevents unnecessary movements and wastage of effort.

5. Taking adequate rest

- Take short breaks during demanding activities.
- Alternate heavy activities with light activities.
- Avoid working continuously for excessively long periods.
- Allow adequate recovery after physically demanding work.

6. Using labour-saving devices

Examples include:

- Electric irons.
- Washing machines.
- Food processors.
- Blenders.
- Vacuum cleaners.
- Electric kettles.
- Pressure cookers.

7. Avoiding unnecessary movements

- Place equipment near the working area.
- Carry several light items together when safe.
- Avoid repeatedly moving between rooms.
- Return equipment to designated storage areas.

8. Delegating responsibilities

- Share household duties among family members according to their abilities.
- Assign age-appropriate tasks to children.
- Avoid placing the entire household workload on one person.

9. Alternating activities

Combine heavy activities with lighter activities to avoid continuous use of the same muscles.

For example:

- Wash clothes, then sit and prepare a shopping list.
- Sweep the house, then organise kitchen utensils.
- Carry shopping, then perform a light seated activity.

10. Maintaining a comfortable working environment

- Ensure adequate lighting.
- Provide sufficient ventilation.
- Maintain comfortable working temperatures.
- Keep floors dry and free from obstructions.
- Arrange furniture to allow free movement.

3.5 Principles of Efficient Working in Home Management

These are guidelines that help individuals perform household activities with minimum unnecessary effort.

1. **Plan before starting:** Decide what needs to be done before beginning the work.

2. **Have everything ready:** Assemble all necessary equipment and materials before starting.

3. **Arrange equipment conveniently:** Keep frequently used items within easy reach.

4. **Use the correct equipment:** Select tools suitable for the activity.

5. **Work at a suitable height:** Arrange working surfaces to minimise bending and stretching.

6. **Use correct body movements:** Avoid unnecessary twisting, reaching and lifting.

7. **Maintain good posture:** Use positions that reduce strain on the body.

8. **Combine compatible activities:** Dovetail activities where safe and appropriate.

9. **Avoid unnecessary handling:** Reduce repeated picking up, moving and rearranging of items.

10. **Maintain a steady working pace:** Avoid excessive rushing, which may cause fatigue and accidents.

11. **Alternate demanding activities:** Avoid continuous performance of heavy tasks.

12. **Clean as you work:** This prevents the accumulation of unnecessary work at the end.

4.0 IMPORTANCE OF MANAGING TIME AND ENERGY

Effective management of time and energy is essential in household management and everyday life.

The importance includes:

1. Increases productivity

Proper management enables individuals to complete more household activities within the available time without compromising the quality of work.

2. Reduces fatigue

Organising tasks and using appropriate working methods reduces unnecessary physical and mental effort.

3. Saves time

Planning, prioritising and dovetailing reduce delays and unnecessary repetition of activities.

4. Promotes good health

Proper scheduling allows individuals to allocate sufficient time for meals, rest, exercise and sleep.

5. Reduces stress

Knowing what needs to be done and when to do it reduces confusion, anxiety and pressure.

6. Improves household organisation

Activities are performed systematically, making it easier to maintain a clean, safe and comfortable home.

7. Promotes family cooperation

Planning and sharing responsibilities encourage family members to participate in household activities.

8. Improves quality of work

Sufficient time and appropriate energy allocation enable individuals to perform activities carefully and achieve better results.

9. Promotes punctuality

Proper time allocation helps individuals complete activities and meet deadlines.

10. Reduces household expenditure

Efficient management can reduce unnecessary use of electricity, water and other household resources.

11. Promotes work-life balance

Individuals can create time for employment, education, family responsibilities, recreation and personal development.

12. Reduces accidents

Rushing often causes mistakes and accidents. Proper planning allows household activities to be performed safely.

13. Encourages self-discipline

Following a daily or weekly schedule develops responsibility, commitment and consistency.

14. Promotes environmental conservation

Efficient use of water, electricity and other resources helps minimise wastage.

15. Improves family relationships

Sharing household responsibilities reduces conflict and promotes cooperation among family members.

16. Promotes achievement of household goals

Proper management ensures that household objectives are achieved within the planned period.

5.0 DEVELOPING A TIME PLAN FOR HOUSEHOLD ACTIVITIES

5.1 Meaning of a Time Plan

A **time plan** is a written schedule that shows the activities to be performed, the order in which they should be carried out and the time allocated to each activity.

A time plan is an important tool in household management because it helps individuals organise their daily responsibilities and use available time effectively.

A good time plan should consider:

- The activities to be performed.
- The importance of each activity.
- The time available.
- The duration of each activity.
- The resources required.
- The energy needed.
- The sequence of activities.
- Opportunities for dovetailing.
- Rest and relaxation.
- Unexpected interruptions.

5.2 Importance of Developing a Time Plan

1. Provides a clear guide for daily activities.
2. Helps individuals allocate sufficient time to different activities.
3. Prevents forgetting important responsibilities.

4. Promotes proper sequencing of activities.
5. Helps avoid unnecessary delays.
6. Allows time for rest and recreation.
7. Encourages discipline and responsibility.
8. Helps monitor the completion of activities.
9. Promotes efficient use of household resources.
10. Helps identify activities that can be combined.

5.3 Steps in Developing an Effective Time Plan

Step 1: Identify the activities

List all the activities that need to be performed.

For example:

- Preparing breakfast.
- Washing utensils.
- Cleaning the house.
- Washing clothes.
- Preparing lunch.
- Shopping.
- Studying.
- Resting.

Step 2: Determine the available time

Identify the period within which the activities must be completed.

For example, a household member may have Saturday from 6:00 a.m. to 5:00 p.m. available for household responsibilities.

Step 3: Prioritise the activities

Arrange activities according to their importance and urgency.

Activities that involve food safety, personal hygiene and immediate family needs should receive appropriate priority.

Step 4: Estimate the duration of each activity

Determine how long each activity is likely to take.

For example:

- Sweeping: 20 minutes.
- Washing utensils: 15 minutes.
- Preparing breakfast: 30 minutes.
- Washing clothes: 45 minutes.

Step 5: Sequence the activities

Arrange activities in a logical order.

For example, when preparing a family meal:

1. Wash hands.
2. Prepare ingredients.
3. Start cooking food requiring the longest cooking time.
4. Prepare accompanying dishes.
5. Set the table.
6. Serve the meal.

Step 6: Identify opportunities for dovetailing

Identify compatible activities that can be performed during waiting periods.

For example, preparing vegetables while beans are cooking, provided the cooking process is safely monitored.

Step 7: Allocate time for rest

Include sufficient time for meals, relaxation and recovery from demanding activities.

Step 8: Prepare the written time plan

Present the activities in a timetable showing their starting and finishing times.

Step 9: Implement the plan

Follow the schedule while maintaining flexibility where necessary.

Step 10: Evaluate the plan

Check whether:

- All planned activities were completed.
- The time allocations were realistic.
- The activities were properly sequenced.
- Energy was used efficiently.
- Adequate rest was provided.
- Any improvements are necessary.

5.4 Sample Time Plan for Household Activities

Situation: A household member is required to organise household activities on a Saturday.

Time	Activity	Energy management consideration
6:00–6:15 a.m.	Wake up and personal hygiene	Prepare mentally for the day.
6:15–6:45 a.m.	Prepare breakfast	Arrange ingredients beforehand.
6:45–7:15 a.m.	Eat breakfast	Take time to eat properly.
7:15–7:30 a.m.	Wash utensils	Clean as you work.
7:30–8:00 a.m.	Sweep and dust the house	Use appropriate cleaning tools.
8:00–8:30 a.m.	Collect and sort laundry	Separate clothes by colour and fabric.

8:30–9:15 a.m.	Wash clothes	Soak heavily soiled clothes where appropriate.
9:15–9:45 a.m.	Prepare lunch ingredients	Dovetail with the laundry drying process.
9:45–10:30 a.m.	Cook lunch	Prepare dishes in a logical sequence.
10:30–11:00 a.m.	Rest and light household organisation	Allow recovery.
11:00–11:30 a.m.	Serve and eat lunch	Maintain good hygiene.
11:30 a.m.–12:00 noon	Wash utensils	Avoid accumulation of dirty utensils.
12:00–12:30 p.m.	Fold dry clothes or organise laundry	Perform light activities.
12:30–1:30 p.m.	Rest and recreation	Restore physical and mental energy.
1:30–2:00 p.m.	Organise household supplies	Check available resources.
2:00–3:00 p.m.	Personal study or reading	Allocate time to personal development.
3:00–3:30 p.m.	Prepare an evening snack	Use available ingredients.
3:30–4:00 p.m.	Clean the working area	Return equipment to storage.
4:00–5:00 p.m.	Recreation and family interaction	Promote family wellbeing.

Note: The schedule is illustrative. Actual time allocations should be adjusted according to household size, available equipment, individual abilities and local circumstances.

5.5 Characteristics of a Good Time Plan

A good time plan should have the following characteristics:

1. **Realistic:** The activities should be achievable within the available time.
2. **Flexible:** It should allow adjustments when unexpected situations arise.
3. **Clear:** Activities should be stated in understandable language.
4. **Well-sequenced:** Activities should be arranged in a logical order.
5. **Balanced:** It should include work, rest, meals, recreation and personal responsibilities.
6. **Time-conscious:** Each activity should have an appropriate time allocation.
7. **Practical:** It should consider the resources and equipment available.
8. **Efficient:** It should minimise unnecessary movements and wastage of effort.
9. **Safe:** Activities should be arranged to avoid accidents and injuries.
10. **Evaluative:** It should allow individuals to assess whether planned objectives have been achieved.

5.6 Common Mistakes When Preparing a Time Plan

1. Allocating insufficient time to demanding activities.
2. Failing to prioritise important activities.
3. Ignoring rest periods.
4. Planning too many activities for one day.
5. Failing to consider available resources.
6. Arranging activities in an illogical order.

7. Combining incompatible activities.
8. Ignoring the needs of other household members.
9. Failing to allow for unexpected interruptions.
10. Not evaluating the effectiveness of the plan.

6.0 ESSENTIAL SKILLS FOR EFFECTIVE TIME AND ENERGY MANAGEMENT

Successful time and energy management requires individuals to develop practical skills and positive habits.

6.1 Decision-making skills

Decision-making refers to the ability to select the most appropriate course of action from available alternatives.

Application in Home Science:

- Deciding which household activity should be performed first.
- Selecting suitable equipment.
- Choosing between manual and mechanised methods of work.
- Determining which activities can be safely combined.

6.2 Organisational skills

Organisational skills involve arranging activities, resources and responsibilities systematically.

Examples:

- Arranging kitchen utensils.
- Organising cleaning materials.
- Preparing household schedules.
- Keeping food storage areas orderly.

6.3 Communication skills

Communication skills involve sharing information clearly and appropriately with other people.

Application:

- Informing family members about household schedules.
- Assigning duties.
- Asking for assistance.
- Discussing changes to household routines.

6.4 Delegation skills

Delegation refers to assigning responsibilities to other people who are capable of performing them.

Examples:

- Asking an older child to arrange dining utensils.
- Assigning shopping responsibilities to an available adult.
- Sharing laundry responsibilities among family members.

Delegation should consider age, ability, safety and fairness.

6.5 Problem-solving skills

Problem-solving refers to identifying challenges and finding suitable ways of overcoming them.

Examples:

- Finding alternative cooking methods during a power interruption.
- Rearranging activities when water supply is interrupted.
- Adjusting a time plan when a family member becomes ill.

6.6 Self-discipline

Self-discipline is the ability to control one's behaviour and remain committed to planned responsibilities.

Examples:

- Following a household timetable.
- Avoiding unnecessary distractions.
- Completing tasks within the allocated period.
- Keeping equipment in its proper place.

6.7 Time estimation skills

These involve estimating the amount of time required to complete different activities.

Examples:

- Estimating the time needed to prepare a meal.
- Estimating the time required to wash clothes.
- Allowing additional time for unexpected delays.

6.8 Monitoring and evaluation skills

Monitoring involves checking progress while activities are being performed.

Evaluation involves assessing the final results to determine whether objectives have been achieved.

Examples:

- Checking whether household activities are being completed according to the timetable.
- Assessing whether enough time was allocated to cooking.
- Identifying activities that caused unnecessary fatigue.

6.9 Adaptability

Adaptability refers to the ability to adjust plans and working methods when circumstances change.

Examples:

- Changing meal preparation arrangements when electricity is unavailable.
- Adjusting household duties during rainy weather.
- Rearranging activities when unexpected visitors arrive.

6.10 Self-motivation

Self-motivation is the ability to encourage oneself to perform activities without constant supervision.

Examples:

- Completing cleaning duties willingly.
- Maintaining a daily household routine.
- Setting personal targets and working towards achieving them.

7.0 DEVELOPING GOOD TIME AND ENERGY MANAGEMENT HABITS

Time and energy management should become part of everyday life rather than an occasional activity.

The following habits help individuals manage household responsibilities effectively:

1. Wake up at an appropriate and consistent time.
2. Prepare a daily activity schedule.
3. Identify the most important tasks of the day.
4. Avoid postponing important activities unnecessarily.
5. Prepare equipment and materials before beginning work.
6. Maintain a clean and organised working area.
7. Complete activities systematically.
8. Avoid unnecessary interruptions.
9. Share household responsibilities fairly.
10. Take appropriate breaks.
11. Maintain correct working posture.
12. Use labour-saving equipment appropriately.
13. Avoid unnecessary movements.
14. Set realistic household goals.
15. Review daily achievements.
16. Adjust future plans based on experience.
17. Maintain adequate hydration and balanced nutrition.
18. Allow adequate time for sleep and recreation.

8.0 CRITIQUING A TIME PLAN

8.1 Meaning of Critiquing a Time Plan

Critiquing a time plan refers to examining and evaluating a prepared schedule to identify its strengths, weaknesses and areas that require improvement.

It helps determine whether the plan promotes effective management of time and energy.

8.2 Aspects to Consider When Critiquing a Time Plan

1. **Proper sequencing:** Are activities arranged in a logical order?

2. **Time allocation:** Has sufficient time been allocated to each activity?

3. **Prioritisation:** Are urgent and important activities given appropriate attention?

4. **Dovetailing:** Are compatible activities combined appropriately?

5. **Energy conservation:** Does the plan minimise unnecessary physical effort?

6. **Rest periods:** Has sufficient time been allocated for relaxation?

7. **Availability of resources:** Does the plan consider available equipment and materials?

8. **Flexibility:** Does it allow adjustments when unexpected events occur?

9. **Safety:** Are activities arranged in a way that minimises accidents?

10. **Achievement of objectives:** Does the plan enable the individual to complete the intended activities?

8.3 Example of Critiquing a Poor Time Plan

Time	Activity
7:00–8:00 a.m.	Washing clothes
8:00–9:00 a.m.	Preparing breakfast
9:00–10:00 a.m.	Sweeping the house
10:00–11:00 a.m.	Resting
11:00 a.m.–12:00 noon	Preparing lunch

Weaknesses identified

1. Breakfast is prepared relatively late.
2. No time is allocated for eating breakfast.
3. Activities are not necessarily arranged according to household priorities.
4. The schedule may not make effective use of waiting periods during laundry.
5. No time is allocated for washing utensils.
6. The plan does not clearly consider the energy demands of activities.
7. The schedule may not adequately provide for unexpected interruptions.

Suggested improvements

1. Prepare breakfast earlier.
2. Include time for meals.
3. Sort laundry before washing.
4. Dovetail suitable activities during laundry waiting periods.
5. Arrange activities according to urgency and importance.
6. Include adequate rest periods.
7. Allocate time for cleaning utensils and organising the working area.

9.0 APPLICATION OF TIME AND ENERGY MANAGEMENT IN THE KENYAN HOUSEHOLD

Time and energy management is important in different household situations in Kenya.

9.1 Meal preparation

A person preparing githeri, rice, ugali, vegetables or other family meals can:

- Prepare ingredients beforehand.
- Sort and wash food items.
- Begin cooking foods requiring longer preparation time.
- Use suitable cooking equipment.
- Prepare accompanying dishes during safe waiting periods.
- Clean utensils as work progresses.



9.2 Laundry management

- Sort clothes according to colour and fabric.
- Soak heavily soiled clothes where appropriate.
- Wash similar clothes together.
- Use appropriate detergents.
- Dry clothes in a suitable place.
- Fold and store clothes systematically.

9.3 Kitchen management

- Arrange frequently used utensils conveniently.
- Clean surfaces after use.
- Organise food storage.
- Prepare ingredients before cooking.
- Maintain proper kitchen hygiene.

9.4 Shopping management

- Prepare a shopping list.
- Compare prices.
- Group items according to shop sections.
- Purchase essential items first.
- Plan shopping trips to reduce unnecessary travel.

9.5 Cleaning management

- Identify areas requiring cleaning.
- Gather cleaning materials.
- Dust before sweeping and mopping.
- Clean from less contaminated areas to more contaminated areas.
- Return equipment to storage after use.

9.6 Childcare management

- Prepare children's meals in advance where appropriate.
- Establish suitable routines.
- Organise clothing and personal items.
- Allocate time for feeding, bathing and supervision.
- Ensure that children are supervised when household activities are being performed.

10.0 SUMMARY OF KEY TERMS

Term	Meaning
Time	A resource used to organise activities within specific periods.
Energy	The capacity to perform work.
Time management	Planning and controlling the use of available time.
Energy management	Using physical and mental effort efficiently.
Planning	Deciding in advance what activities should be performed and how.
Prioritising	Arranging activities according to importance and urgency.
Goal setting	Identifying results to be achieved within a given period.

Breaking down tasks	Dividing large activities into smaller manageable steps.
Time blocking	Allocating specific time periods to particular activities.
Dovetailing	Combining compatible activities to save time and effort.
Delegation	Assigning responsibilities to other people.
Time plan	A written schedule of activities and their allocated time.
Fatigue	Physical or mental tiredness resulting from activity.
Critiquing	Examining a plan to identify strengths and weaknesses.
Labour-saving devices	Equipment that reduces the effort needed to perform work.

REVISION QUESTIONS

GRADE 11 HOMESCIENCE

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.2: TIME AND ENERGY MANAGEMENT

Section A: 30 Marks

Section B: 50 Marks

Instructions to learners

1. Answer all questions in Section A.
2. Select the best answer from the four alternatives provided.
3. Answer all questions in Section B.
4. Write your answers clearly and give relevant examples where necessary.

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Choose the correct answer in each question.

1. Which of the following best describes time management in household activities?

A. Performing all household activities simultaneously.

B. Planning and organising activities within available time.

C. Completing household activities without taking breaks.

D. Performing activities without considering their importance.

2. A Grade 11 learner prepares a schedule showing when to clean the house, prepare meals and study. Which aspect of time management is demonstrated?

A. Delegation.

B. Dovetailing.

C. Planning.

D. Fatigue management.

3. Which of the following is the best example of prioritising household activities?

A. Watching television before preparing supper.

B. Cleaning a storage room before attending to a sick child.

C. Preparing an important family meal before undertaking less urgent activities.

D. Performing household activities randomly.

4. A person intends to clean the kitchen every Saturday within one hour. This is an example of:

A. Goal setting.

B. Dovetailing.

C. Delegation.

D. Fatigue.

5. Which of the following best describes breaking down tasks?

A. Postponing difficult activities.

B. Dividing a large activity into smaller manageable steps.

C. Performing several activities carelessly.

D. Allocating equal time to all activities.

6. A household member allocates 30 minutes for breakfast preparation and 20 minutes for cleaning utensils. This demonstrates:

A. Time blocking.

B. Delegation.

C. Emotional energy.

D. Problem solving.

7. Which of the following situations illustrates dovetailing?

A. Washing clothes after completing all other household activities.

B. Preparing vegetables while beans are safely cooking.

C. Cleaning the kitchen before preparing breakfast.

D. Washing the same clothes twice.

8. Which of the following is an example of physical energy?

A. Preparing a household budget.

B. Deciding on a weekly meal plan.

C. Carrying a container of water.

D. Solving a household disagreement.

9. Mental energy is mainly required when:

A. Sweeping the floor.

B. Carrying shopping bags.

C. Washing clothes by hand.

D. Calculating the cost of household groceries.

10. Which factor is likely to increase fatigue during household activities?

A. Proper working posture.

B. Organised working space.

C. Poor ventilation.

D. Appropriate equipment.

11. A person arranges kitchen utensils within easy reach before preparing a meal. The main benefit is:

A. Increasing unnecessary movements.

B. Reducing physical effort.

C. Increasing the cooking time.

D. Increasing household expenditure.

12. Which of the following is a labour-saving device used in laundry management?

A. Mortar and pestle.

B. Washing machine.

C. Charcoal stove.

D. Wooden spoon.

13. Which body movement is recommended when lifting a heavy household object?

A. Bending the back sharply.

B. Twisting the waist while lifting.

C. Bending the knees and keeping the load close to the body.

D. Lifting the load with one hand regardless of its weight.

14. Which of the following contributes most directly to energy restoration?

A. Continuous working.

B. Adequate rest and sleep.

C. Skipping meals.

D. Rushing household activities.

15. A household member assigns an older child the responsibility of arranging dining utensils. This is an example of:

A. Delegation.

B. Time blocking.

C. Prioritising.

D. Goal setting.

16. Which of the following is an advantage of developing a time plan?

A. Encourages unnecessary delays.

B. Increases confusion.

C. Promotes systematic performance of activities.

D. Eliminates the need for rest.

17. Which characteristic makes a time plan practical?

A. It contains more activities than can be completed.

B. It considers available time and resources.

C. It excludes unexpected interruptions.

D. It allocates equal time to every activity.

18. A learner prepares a list of household activities and arranges them according to urgency. Which skill is being demonstrated?

A. Prioritisation.

B. Emotional control.

C. Delegation.

D. Recreation.

19. Which of the following is an example of a long-term household goal?

A. Washing utensils after lunch.

B. Sweeping the kitchen today.

C. Developing a sustainable household budgeting routine.

D. Preparing breakfast tomorrow.

20. In the SMART goal-setting principle, the letter M stands for:

A. Meaningful.

B. Measurable.

C. Manageable.

D. Motivational.

21. Which of the following activities should receive immediate attention?

A. Rearranging an already organised bookshelf.

B. Watching a television programme.

C. Cleaning a dangerous liquid spill on the floor.

D. Organising photographs.

22. Which of the following is a benefit of alternating heavy and light activities?

A. Increases muscle strain.

B. Reduces opportunities for rest.

C. Minimises fatigue.

D. Increases unnecessary movement.

23. Why should rest periods be included in a household time plan?

A. To encourage postponement of all activities.

B. To allow recovery of physical and mental energy.

C. To increase household expenditure.

D. To reduce household productivity.

24. Which of the following is an example of efficient kitchen management?

A. Searching for utensils while cooking.

B. Leaving dirty utensils to accumulate.

C. Preparing ingredients and equipment before cooking.

D. Repeating the same preparation activities.

25. A household member changes the planned cleaning schedule because of an unexpected water shortage. Which skill is demonstrated?

A. Adaptability.

B. Procrastination.

C. Dovetailing.

D. Time blocking.

26. Which of the following is an effective way of reducing unnecessary household movements?

A. Storing frequently used utensils far away.

B. Arranging equipment near the working area.

C. Moving furniture repeatedly.

D. Working without a plan.

27. Which of the following best illustrates emotional energy?

A. Carrying firewood.

B. Sweeping the compound.

C. Remaining patient while caring for a crying child.

D. Chopping vegetables.

28. What is the main purpose of critiquing a time plan?

A. To increase the number of household activities.

B. To identify its strengths and weaknesses.

C. To eliminate all household responsibilities.

D. To ensure all activities receive equal time.

29. Which of the following is the most appropriate way of managing household responsibilities among family members?

A. Assigning all activities to one person.

B. Sharing duties according to abilities and availability.

C. Avoiding communication about household activities.

D. Allowing household activities to remain unfinished.

30. Which of the following habits best promotes effective time and energy management?

A. Postponing important tasks.

B. Performing activities without preparation.

C. Following a realistic schedule and reviewing progress.

D. Working continuously without taking breaks.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer ALL questions.

QUESTION 1: FUNDAMENTALS OF TIME AND ENERGY MANAGEMENT (10 MARKS)

a) Define the following terms:

i. Time management. (2 marks)

ii. Energy management. (2 marks)

b) Distinguish between physical energy and mental energy as used in household management. (2 marks)

c) State four reasons why effective management of time and energy is important when performing household activities. (4 marks)

QUESTION 2: ASPECTS OF TIME MANAGEMENT (8 MARKS)

a) Explain the meaning of the following aspects of time management:

i. Planning. (2 marks)

ii. Prioritising. (2 marks)

b) Explain two ways in which breaking down household tasks promotes effective management of time and energy. (2 marks)

c) Give two examples of dovetailing activities in a Kenyan household. (2 marks)

QUESTION 3: ENERGY MANAGEMENT (8 MARKS)

a) State four factors that influence the amount of energy used when performing household activities. (4 marks)

b) Explain four ways through which an individual can conserve energy when carrying out household activities. (4 marks)

QUESTION 4: DEVELOPING A TIME PLAN (8 MARKS)

A household member intends to perform the following activities on a Saturday morning:

- Preparing breakfast.
- Washing utensils.
- Sweeping the house.
- Washing clothes.
- Preparing lunch ingredients.

a) State three factors that should be considered when developing a time plan for the activities. (3 marks)

b) Explain three characteristics of an effective household time plan. (3 marks)

c) State two benefits of sequencing household activities correctly. (2 marks)

QUESTION 5: PRACTICAL APPLICATION OF TIME AND ENERGY MANAGEMENT (8 MARKS)

A family in Narok County spends considerable time preparing meals, washing clothes and cleaning their home. One family member performs almost all the household activities and frequently experiences fatigue.

a) Identify three challenges experienced by the family in managing time and energy. (3 marks)

b) Suggest three practical measures the family can adopt to improve time and energy management. (3 marks)

c) Explain two benefits of sharing household responsibilities among family members. (2 marks)

QUESTION 6: EVALUATION OF A TIME PLAN (8 MARKS)

A learner prepares the following time plan for Saturday:

Time	Activity
6:00–8:00 a.m.	Watching television
8:00–9:00 a.m.	Preparing breakfast
9:00–11:00 a.m.	Washing clothes
11:00 a.m.–12:00 noon	Sweeping the house
12:00–1:00 p.m.	Preparing lunch

a) Identify four weaknesses in the learner's time plan. (4 marks)

b) Suggest two improvements that can make the plan more effective. (2 marks)

c) Explain two reasons why evaluation of a time plan is important. (2 marks)

MARKING SCHEME

GRADE 11 HOME SCIENCE

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.2: TIME AND ENERGY MANAGEMENT

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	C
3	C
4	A
5	B
6	A
7	B
8	C
9	D
10	C
11	B
12	B
13	C
14	B
15	A
16	C
17	B
18	A
19	C
20	B
21	C
22	C
23	B
24	C

25	A
26	B
27	C
28	B
29	B
30	C

Section A: 30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: FUNDAMENTALS OF TIME AND ENERGY MANAGEMENT (10 MARKS)

a) Define the following terms.

i. Time management. (2 marks)

Time management is the process of planning, organising and controlling how available time is used to complete activities efficiently and achieve set objectives.

- Planning and organising available time – 1 mark.
- Using time efficiently to complete activities or achieve objectives – 1 mark.

ii. Energy management. (2 marks)

Energy management is the process of planning and using available physical, mental and emotional energy efficiently when carrying out activities while avoiding unnecessary fatigue.

- Efficient use of available energy – 1 mark.
- Avoiding unnecessary fatigue or maintaining energy for activities – 1 mark.

b) Distinguish between physical energy and mental energy as used in household management. (2 marks)

Physical energy	**Mental energy**
Energy used to perform activities involving body movements and physical effort.	Energy used in thinking, reasoning, planning, decision-making and problem-solving.
Example: Carrying water, sweeping or washing clothes.	Example: Preparing a household budget or planning meals.

Award:

- Correct explanation of physical energy – 1 mark.
- Correct explanation of mental energy – 1 mark.

c) State four reasons why effective management of time and energy is important when performing household activities. (4 marks)

Award 1 mark for each correct response.

1. Helps complete household activities within the available time.
2. Reduces physical and mental fatigue.
3. Promotes efficient use of available resources.

4. Improves household productivity.
5. Reduces unnecessary movements and wastage of time.
6. Creates time for rest and recreation.
7. Promotes proper coordination of household activities.
8. Reduces stress and pressure associated with household responsibilities.
9. Improves the quality of work performed.
10. Encourages sharing of household responsibilities.

Any four correct responses. (4 × 1 = 4 marks)

QUESTION 2: ASPECTS OF TIME MANAGEMENT (8 MARKS)

a) Explain the meaning of the following aspects of time management.

i. Planning. (2 marks)

Planning is the process of deciding in advance what activities need to be done, when they should be done and the resources required to complete them.

- Deciding in advance the activities to be performed – 1 mark.
- Determining when and how the activities will be performed – 1 mark.

ii. Prioritising. (2 marks)

Prioritising is the process of arranging activities according to their importance, urgency and available resources so that the most important tasks receive attention first.

- Arranging activities according to importance or urgency – 1 mark.
- Giving priority to the most important or urgent activities – 1 mark.

b) Explain two ways in which breaking down household tasks promotes effective management of time and energy. (2 marks)

Award 1 mark for each correct explanation.

1. Makes large and complicated activities easier to manage and complete.
2. Helps an individual estimate the time and resources required for each activity.
3. Reduces stress and the feeling of being overwhelmed.
4. Makes it easier to allocate duties to different family members.
5. Helps monitor progress and identify incomplete tasks.
6. Prevents unnecessary repetition of activities.

Any two correct responses. (2 marks)

c) Give two examples of dovetailing activities in a Kenyan household. (2 marks)

Award 1 mark for each correct example.

1. Preparing vegetables while beans are safely cooking.
2. Ironing clothes while water is heating for bathing, provided the activities can be safely supervised.

3. Soaking clothes while preparing breakfast.
4. Washing utensils while food is safely simmering.
5. Preparing ingredients for lunch while waiting for laundry to finish in a washing machine.
6. Sweeping the compound while clothes are drying outside.

Any two practical and safe examples. (2 marks)

QUESTION 3: ENERGY MANAGEMENT (8 MARKS)

a) State four factors that influence the amount of energy used when performing household activities. (4 marks)

Award 1 mark for each correct response.

1. Nature of the activity: Heavy activities such as carrying water require more energy than light activities such as arranging utensils.
2. Duration of the activity: Activities performed for long periods require more energy.
3. Physical fitness and health: A person's health and fitness influence the amount of energy available.
4. Age of the individual: Age may influence physical strength and endurance.
5. Skills and experience: Experienced individuals may perform activities more efficiently and use less energy.
6. Availability of equipment: Labour-saving equipment reduces physical effort.
7. Working environment: Poor ventilation, excessive heat and inadequate lighting may increase fatigue.
8. Working posture: Poor posture and awkward movements increase energy expenditure.
9. Organisation of the working space: Poor arrangement of equipment may cause unnecessary movements.
10. Pace of working: Working too quickly without breaks may increase fatigue.

Any four correct responses. (4 × 1 = 4 marks)

b) Explain four ways through which an individual can conserve energy when carrying out household activities. (4 marks)

Award 1 mark for each correct explanation.

1. Using labour-saving devices: Using washing machines, blenders and vacuum cleaners reduces physical effort.
2. Organising the working area: Keeping frequently used equipment within easy reach reduces unnecessary movements.
3. Adopting correct posture: Maintaining proper body posture prevents unnecessary strain and fatigue.
4. Taking regular rest breaks: Rest allows the body and mind to recover energy.
5. Alternating heavy and light activities: This prevents continuous strain on the same muscles.
6. Sharing household responsibilities: Delegating duties reduces the workload placed on one individual.
7. Dovetailing activities: Combining suitable activities saves time and reduces unnecessary movements.

8. Preparing equipment in advance: Gathering all required materials before starting prevents repeated movements.
9. Using appropriate working methods: Applying efficient techniques reduces wasted effort.
10. Maintaining a suitable working environment: Adequate ventilation and lighting improve working conditions.

Any four correctly explained ways. (4 × 1 = 4 marks)

QUESTION 4: DEVELOPING A TIME PLAN (8 MARKS)

a) State three factors that should be considered when developing a time plan for the activities. (3 marks)

Award 1 mark for each correct response.

1. The amount of time available.
2. The importance and urgency of each activity.
3. The availability of equipment and other resources.
4. The number of people available to perform the activities.
5. The physical ability and energy levels of the individuals involved.
6. The sequence in which activities should be performed.
7. The time required to complete each activity.
8. Possible interruptions or unexpected events.
9. The need for rest periods.

Any three correct responses. (3 marks)

b) Explain three characteristics of an effective household time plan. (3 marks)

Award 1 mark for each correctly explained characteristic.

1. Realistic: It should contain activities that can be completed within the available time.
2. Flexible: It should allow adjustments when unexpected situations arise.
3. Well-organised: Activities should be arranged in a logical sequence.
4. Balanced: It should provide time for work, rest and recreation.
5. Clear: Activities and the time allocated to each should be stated clearly.
6. Practical: It should consider available resources, equipment and people.
7. Prioritised: Important and urgent activities should be given priority.

Any three correct explanations. (3 marks)

c) State two benefits of sequencing household activities correctly. (2 marks)

Award 1 mark for each correct response.

1. Saves time by ensuring activities are performed in a logical order.
2. Reduces unnecessary movements and repetition.
3. Prevents activities from interfering with one another.

4. Promotes efficient use of equipment and resources.
5. Reduces fatigue.
6. Helps complete important activities on time.

Any two correct responses. (2 marks)

QUESTION 5: PRACTICAL APPLICATION OF TIME AND ENERGY MANAGEMENT (8 MARKS)

a) Identify three challenges experienced by the family in managing time and energy. (3 marks)

Award 1 mark for each correct response.

1. Unequal distribution of household responsibilities.
2. Overloading one family member with too many activities.
3. Frequent physical fatigue due to excessive work.
4. Poor planning and organisation of household activities.
5. Lack of adequate rest periods.
6. Possible delays in completing household activities.
7. Inefficient use of available time and energy.
8. Lack of delegation and teamwork.

Any three correct responses. (3 marks)

b) Suggest three practical measures the family can adopt to improve time and energy management. (3 marks)

Award 1 mark for each correct response.

1. Develop a realistic household time plan.
2. Share household duties among family members according to their abilities.
3. Delegate suitable tasks to responsible family members.
4. Use labour-saving devices where available.
5. Arrange household equipment and materials within easy reach.
6. Alternate heavy and light activities.
7. Include adequate rest periods in the daily schedule.
8. Prioritise important and urgent household activities.
9. Dovetail suitable household activities.
10. Prepare ingredients and equipment before beginning household tasks.

Any three correct responses. (3 marks)

c) Explain two benefits of sharing household responsibilities among family members. (2 marks)

Award 1 mark for each correct explanation.

1. Reduces fatigue: The workload is distributed among several people, preventing one person from becoming overworked.

2. Saves time: Different family members can perform suitable activities, allowing tasks to be completed more quickly.
3. Promotes teamwork: Family members learn to cooperate and support one another.
4. Develops responsibility: Members learn to take responsibility for household duties.
5. Improves family relationships: Sharing duties promotes fairness and reduces conflicts.
6. Improves efficiency: Activities are completed according to the abilities and skills of different family members.

Any two correctly explained benefits. (2 marks)

QUESTION 6: EVALUATION OF A TIME PLAN (8 MARKS)

a) Identify four weaknesses in the learner's time plan. (4 marks)

Award 1 mark for each correct weakness.

1. Excessive time allocated to watching television: Two hours are spent on recreation before important household activities are completed.
2. No rest periods: The plan does not include breaks between household activities.
3. No flexibility: The plan does not provide for unexpected interruptions.
4. Heavy activities are scheduled consecutively: Washing clothes and sweeping the house may cause fatigue if no breaks are provided.
5. No time allocated for preparation: The plan does not clearly provide time for gathering equipment and materials.
6. No review or evaluation period: There is no provision for checking whether the planned activities have been completed.
7. Possible inefficient use of morning hours: Important household activities could be prioritised earlier rather than spending the first two hours watching television.

Any four distinct and valid weaknesses. (4 marks)

b) Suggest two improvements that can make the plan more effective. (2 marks)

Award 1 mark for each correct response.

1. Reduce the time allocated to watching television and give priority to important household activities.
2. Include short rest periods between demanding activities.
3. Arrange activities in a logical sequence.
4. Prepare equipment and materials before starting each activity.
5. Allocate realistic time for each activity.
6. Allow flexibility for unexpected interruptions.
7. Share some activities with other family members.

Any two correct improvements. (2 marks)

c) Explain two reasons why evaluation of a time plan is important. (2 marks)

Award 1 mark for each correct explanation.

1. Identifies weaknesses: Evaluation helps identify activities that were not completed or took longer than expected.
2. Improves future planning: It helps an individual make necessary adjustments to future time plans.
3. Promotes efficient use of time: It identifies activities that waste time and those that can be performed more efficiently.
4. Helps manage energy: It shows whether the activities caused excessive fatigue and whether more rest is needed.
5. Measures achievement: It helps determine whether the household objectives were achieved.
6. Improves decision-making: It helps an individual choose better ways of organising household activities.

Any two correctly explained reasons. (2 marks)

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.3: CONTROL OF HOUSEHOLD PESTS AND INSECTS

Learning Area: Home Science **Grade:** 11 **Level:** Senior School

1.0 INTRODUCTION TO HOUSEHOLD PESTS AND INSECTS

Household hygiene and sanitation are important aspects of home management. A clean and well-maintained household promotes good health, comfort and safety among family members.

However, homes may be invaded by different pests and insects that contaminate food, damage household property, spread diseases and cause discomfort.

Examples of household pests and insects include cockroaches, houseflies, mosquitoes, rats, mice, termites, bedbugs, fleas, ants and weevils.

These organisms may be found in kitchens, bedrooms, bathrooms, food stores, rubbish collection areas, drainage systems and other parts of the home.

Effective pest and insect control involves identifying the organisms, understanding their breeding habits, preventing their entry and multiplication, and applying appropriate control methods.







1.1 Meaning of Pests

Pests are organisms that cause harm, damage, contamination, nuisance or economic loss to human beings, their property, food and environment.

In household management, pests are unwanted organisms that interfere with the cleanliness, safety, comfort and proper functioning of a home.

Examples include:

- Rats.
- Mice.
- Cockroaches.
- Termites.
- Bedbugs.
- Weevils.
- Fleas.
- Ants.

1.2 Meaning of Insects

Insects are small invertebrate animals belonging to the class Insecta. They have three main body parts: the head, thorax and abdomen, three pairs of jointed legs and usually one or two pairs of wings, although some insects are wingless.

Examples of insects found in households include:

- Cockroaches.
- Houseflies.
- Mosquitoes.
- Ants.
- Termites.
- Bedbugs.
- Fleas.
- Weevils.

Important: Not all insects are pests. Some insects are beneficial because they pollinate plants, decompose organic matter or help control harmful organisms.

However, insects that damage property, contaminate food or transmit diseases are considered household pests.

1.3 Difference Between Pests and Insects

Pests	Insects
Refer to organisms that cause harm, damage or nuisance.	Refer to animals belonging to the class Insecta.
May include insects, rodents and other organisms.	Are a specific group of invertebrate animals.

Examples include rats, mice and cockroaches.	Examples include ants, mosquitoes and houseflies.
Not all pests are insects.	Not all insects are pests.

Example: A rat is a household pest but not an insect because it is a mammal. A mosquito is both an insect and a household pest.

1.4 Characteristics of Common Household Pests and Insects

Household pests and insects have different characteristics that enable them to survive and multiply in domestic environments.

Some common characteristics include:

1. **Ability to reproduce:** Many pests multiply rapidly, making it difficult to control them if action is delayed.

2. **Ability to hide:** Some pests hide in cracks, furniture, bedding, cupboards and dark corners.

3. **Ability to survive in different conditions:** Some pests can survive in damp, dirty, warm or poorly maintained environments.

4. **Ability to contaminate food:** Some pests move between waste materials and food, transferring disease-causing microorganisms.

5. **Ability to damage property:** Some pests feed on wood, fabrics, paper, stored food and other household materials.

6. **Ability to spread diseases:** Certain pests transmit pathogens that cause human diseases.

7. **Ability to multiply where sanitation is poor:** Accumulated waste, stagnant water and uncovered food create favourable breeding conditions for many pests.

2.0 TYPES OF HOUSEHOLD PESTS AND INSECTS

Household pests can be classified according to their physical characteristics, feeding habits, habitats and the type of damage they cause.

2.1 Cockroaches



Meaning

Cockroaches are crawling insects that commonly inhabit warm, dark and moist places within and around households.

They are commonly found in kitchens, bathrooms, drainage areas, cupboards and places where food remains are available.

Common characteristics of cockroaches

1. They have flattened oval-shaped bodies.
2. They have six jointed legs.

3. They have long antennae.
4. Most household cockroaches have wings, although not all fly effectively.
5. They are mainly active at night.
6. They hide in cracks, crevices and dark corners.
7. They reproduce by laying eggs enclosed in protective egg cases called oothecae.
8. They feed on a wide range of organic materials, including food remains and waste.

Types of cockroaches commonly found in households

- American cockroach.
- German cockroach.
- Oriental cockroach.
- Brown-banded cockroach.

Effects of cockroaches in a household

1. **Food contamination:** They crawl over food and food preparation surfaces, transferring microorganisms from dirty places.

2. **Spread of disease-causing organisms:** They may mechanically carry bacteria and other pathogens associated with foodborne illnesses.

3. **Unpleasant smell:** Large infestations may produce an unpleasant odour.

4. **Damage to materials:** They may feed on paper, cardboard, fabrics and other organic materials.

5. **Allergic reactions:** Their body parts and droppings may trigger allergic reactions and worsen asthma in susceptible individuals.

6. **Psychological discomfort:** Their presence may cause fear, embarrassment and discomfort among household members.

Signs of cockroach infestation

- Presence of live cockroaches, especially at night.
- Small dark droppings in cupboards and corners.
- Egg cases in hidden places.
- Unpleasant musty smell.
- Shed skins and body remains.

2.2 Houseflies



Houseflies are flying insects commonly found in homes, especially in areas where food waste, animal faeces and decomposing organic materials are present.

The common housefly is scientifically known as *Musca domestica*.

Characteristics of houseflies

1. They have three body parts: head, thorax and abdomen.
2. They have six legs.
3. They have one functional pair of wings.
4. They possess compound eyes.
5. They have specialised mouthparts adapted for sponging liquid or dissolved food.
6. They have short antennae.
7. They reproduce by laying eggs, commonly in decomposing organic matter.
8. They develop through four stages: egg, larva, pupa and adult.

Effects of houseflies in a household

1. **Contamination of food:** They land on uncovered food after visiting waste and faecal materials.

2. **Transmission of disease-causing organisms:** They can mechanically transfer pathogens associated with diarrhoeal diseases and other infections.

3. **Food spoilage:** Their presence reduces the hygiene and quality of food.

4. **Discomfort:** Constant buzzing and movement around food and people cause annoyance.

5. **Poor household hygiene:** Large numbers of houseflies may indicate poor waste disposal and sanitation.

Signs of housefly infestation

- Large numbers of flies around food.
- Flies gathering around rubbish bins.
- Maggots in decomposing waste.
- Flies resting on walls, windows and food preparation surfaces.

2.3 Mosquitoes



Meaning

Mosquitoes are small flying insects belonging to the family Culicidae. They are commonly found in areas where stagnant water provides suitable breeding conditions.

Female mosquitoes of certain species feed on human or animal blood, which is necessary for egg development.

Characteristics of mosquitoes

1. They have slender bodies.
2. They have six long legs.
3. They possess one pair of functional wings.
4. They have long antennae.
5. They have a long proboscis used for feeding.
6. They undergo complete metamorphosis.
7. Their life cycle includes egg, larva, pupa and adult stages.
8. Their larvae and pupae develop in water.

Types of mosquitoes of public health importance

A. Anopheles mosquitoes

- Some species transmit malaria parasites.
- They commonly breed in suitable freshwater habitats.
- They are important in malaria transmission in Kenya.

B. Aedes mosquitoes

- Certain species transmit dengue, chikungunya and yellow fever viruses.
- Some breed in small water containers around homes.
- They may bite during the day.

C. Culex mosquitoes

- Some species transmit diseases such as lymphatic filariasis and West Nile virus.
- They may breed in polluted or stagnant water.

Effects of mosquitoes in a household

1. **Transmission of malaria:** Infected female Anopheles mosquitoes transmit malaria parasites when they bite humans.

2. **Transmission of viral diseases:** Certain mosquito species transmit diseases such as dengue and yellow fever.

3. **Sleep disturbance:** Mosquito buzzing and biting interrupt sleep.

4. **Skin irritation:** Mosquito bites may cause itching, swelling and irritation.

5. **Allergic reactions:** Some individuals experience stronger reactions to mosquito bites.

6. **Reduced comfort:** Mosquito infestations make household environments uncomfortable.

Signs of mosquito breeding or infestation

- Mosquitoes flying inside bedrooms.
- Presence of larvae in stagnant water.
- Mosquitoes resting in dark, sheltered areas.

- Frequent mosquito bites.
- Presence of uncovered water containers.

2.4 Bedbugs



Meaning

Bedbugs are small, flattened, wingless parasitic insects that feed on human blood. They commonly hide in mattresses, bed frames, furniture joints, cracks and crevices.

The common bedbug is scientifically known as *Cimex lectularius*.

Characteristics of bedbugs

1. They have flattened oval-shaped bodies.
2. They are reddish-brown when fully grown.
3. They have six legs.
4. They do not have functional wings.
5. They feed mainly on human blood.
6. They are usually more active at night.
7. They hide in mattress seams, bed frames and furniture joints.
8. They reproduce by laying eggs in protected places.

Effects of bedbugs in households

1. Cause itchy skin bites.
2. Disturb sleep.
3. May cause skin irritation and allergic reactions.
4. Cause psychological distress and embarrassment.
5. May lead to secondary skin infections when bites are scratched excessively.
6. Can spread between sleeping areas through infested furniture, luggage and clothing.

Important: Bedbugs are not established as vectors of human infectious diseases.

Signs of bedbug infestation

- Small blood stains on bed sheets.
- Dark faecal spots on mattresses.
- Shed skins around bed frames.

- Live insects in mattress seams.
- Small pale eggs in hidden areas.
- Itchy bite reactions, although bites alone do not confirm infestation.

2.5 Rats and Mice





Meaning

Rats and mice are small mammals belonging to the order Rodentia. They are common household pests that may invade homes in search of food, water and shelter.

They are not insects.

Characteristics of rats and mice

1. They have continuously growing incisor teeth.
2. They possess four limbs.
3. They have fur-covered bodies.
4. They have long tails, although tail length varies among species.
5. They have a strong sense of smell.
6. They reproduce rapidly under favourable conditions.
7. They are capable of squeezing through small openings.
8. They are generally active at night, although they may also be seen during the day.

Effects of rats and mice in households

1. **Food contamination:** Their urine, droppings and hair may contaminate stored food.

2. **Disease transmission:** Rodents may spread diseases such as leptospirosis and, in some settings, plague.

3. **Damage to property:** They gnaw electrical cables, furniture, clothing, books and stored materials.

4. **Food losses:** They consume and destroy stored grains, cereals and other food products.

5. **Fire hazards:** Gnawing of electrical insulation may expose wires and increase the risk of electrical faults.

6. **Unpleasant smell:** Rodent urine and dead rodents may produce offensive odours.

7. **Psychological discomfort:** Their presence may cause fear and anxiety among household members.

Signs of rat and mouse infestation

- Droppings around food stores.
- Gnaw marks on food containers and furniture.
- Scratching sounds in ceilings and walls.
- Nests made from shredded materials.
- Footprints and greasy marks along walls.
- Damaged food packages.

2.6 Termites



Meaning

Termites are social insects that feed mainly on cellulose-containing materials such as wood, paper and plant matter.

They live in organised colonies and may cause extensive damage to household structures and furniture.

Characteristics of termites

1. They live in organised colonies.
2. They have three body regions.
3. They have six legs.
4. Worker termites are generally pale or whitish.
5. Reproductive termites may have wings.
6. They feed on cellulose-containing materials.
7. They may build mud tubes for movement and protection.
8. Their colonies may contain workers, soldiers and reproductive individuals.

Effects of termites in households

1. Damage wooden furniture.
2. Weaken wooden doors and window frames.
3. Damage roof structures and timber supports.
4. Destroy books, cardboard and paper materials.
5. Damage wooden floors and fittings.
6. Cause economic losses through repair and replacement of damaged property.

Signs of termite infestation

- Mud tubes on walls and foundations.
- Hollow-sounding wooden structures.
- Damaged wooden furniture.
- Discarded wings near windows and doors.
- Small holes and weakened timber.
- Termite droppings in areas infested by drywood termites.

2.7 Ants



Meaning

Ants are social insects that live in colonies and may enter households in search of food, water and shelter.

Characteristics of ants

1. They have three body regions.
2. They have six legs.
3. They possess elbowed antennae.
4. They have narrow waists.
5. They live in organised colonies.
6. They communicate using chemical signals called pheromones.
7. They feed on different materials depending on the species.
8. They may build nests in soil, walls, floors and other sheltered places.

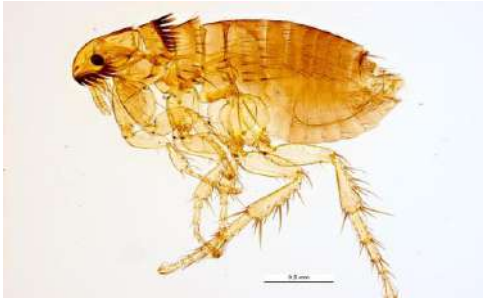
Effects of ants in households

1. Contaminate food.
2. Invade food storage areas.
3. Cause nuisance when present in large numbers.
4. Some species bite or sting.
5. Some may damage electrical equipment by nesting in or around appliances.
6. Some species protect plant pests such as aphids in gardens.

Signs of ant infestation

- Long trails of ants.
- Ant nests around the house.
- Ants gathering around sugary foods.
- Small soil heaps near foundations.
- Ants entering cupboards and food containers.

2.8 Fleas



Meaning

Fleas are small, wingless, blood-feeding insects that commonly infest household pets and their surroundings.

They have strong hind legs adapted for jumping.

Characteristics of fleas

1. They are small and wingless.
2. They have flattened bodies.
3. They possess strong hind legs.
4. They feed on the blood of humans and animals, depending on the species.
5. They undergo complete metamorphosis.
6. Their eggs and immature stages may occur in carpets, bedding and animal resting places.
7. They multiply rapidly under favourable conditions.

Effects of fleas in households

1. Cause itchy bites.
2. Irritate pets and other animals.
3. May cause allergic skin reactions.
4. Can transmit certain pathogens and parasites.
5. Cause discomfort to household members.
6. May lead to secondary infections when bites are scratched.

Signs of flea infestation

- Frequent scratching by household pets.
- Small jumping insects on carpets.

- Flea dirt on animal bedding.
- Bites around ankles and lower legs.
- Flea eggs or immature stages in animal resting areas.

2.9 Weevils



Meaning

Weevils are small beetles with elongated snouts. Some species attack stored cereals and other food products.

The maize weevil, *Sitophilus zeamais*, is an important storage pest in Kenya.

Characteristics of weevils

1. They are small beetles.
2. Many species possess an elongated snout.
3. They have six legs.
4. They have hard forewings that protect the hindwings.
5. Some species attack stored grains.
6. Their larvae develop inside grains or other plant materials.
7. They reproduce rapidly under favourable storage conditions.

Effects of weevils in households

1. Destroy stored maize, rice, wheat and other cereals.
2. Reduce the quality of stored food.
3. Cause weight loss in stored grains.
4. Contaminate food with insect remains and waste.
5. Reduce the nutritional and market value of stored cereals.
6. Cause financial losses through food wastage.

Signs of weevil infestation

- Small holes in stored grains.
- Presence of adult beetles in food containers.
- Powdery material in stored cereals.
- Damaged grains.
- Increased insect activity in storage containers.

3.0 IMPORTANCE OF PEST AND INSECT CONTROL IN A HOUSEHOLD

Pest and insect control refers to the measures taken to prevent, reduce or eliminate harmful pests and insects from household environments.

Controlling household pests is important because they threaten human health, food safety, household property and environmental cleanliness.

3.1 Importance of Controlling Household Pests and Insects

1. Prevention of disease transmission

Some pests and insects carry disease-causing microorganisms and parasites. Controlling them reduces the risk of infections.

Examples:

- Mosquito control reduces the risk of malaria transmission.
- Housefly control reduces the risk of contamination by organisms associated with diarrhoeal diseases.
- Rodent control reduces exposure to diseases such as leptospirosis.

2. Protection of food from contamination

Pests such as cockroaches, rats, mice and houseflies may contaminate food with droppings, urine, body parts and microorganisms.

Effective control ensures food remains safe for consumption.

3. Prevention of food wastage

Weevils, rats and mice destroy stored cereals and other food products.

Controlling these pests helps households minimise food losses and save money.

4. Protection of household property

Termites, rats and mice damage furniture, electrical cables, wooden structures, clothing and other household materials.

Controlling them reduces repair and replacement costs.

5. Promotion of personal hygiene

A pest-free home is easier to maintain and keep clean.

6. Promotion of comfortable living conditions

Pests such as bedbugs, mosquitoes, fleas and cockroaches cause discomfort, irritation and disturbance.

Their control promotes peaceful sleep and comfort.

7. Prevention of allergic reactions

Cockroach body parts, droppings and dust associated with infestations may trigger allergic reactions and asthma symptoms in susceptible individuals.

8. Protection of household finances

Controlling pests reduces expenditure on:

- Replacing damaged furniture.

- Purchasing pesticides repeatedly.
- Treating pest-related illnesses.
- Replacing contaminated food.
- Repairing damaged buildings.

9. Protection of stored food

Appropriate storage and pest control protect cereals, flour, beans, rice and other food products from insect infestation.

10. Promotion of mental wellbeing

A pest-free household reduces fear, embarrassment, anxiety and stress associated with infestations.

11. Protection of domestic animals

Controlling fleas, ticks and other harmful pests helps protect pets and livestock kept around the home.

12. Maintenance of a clean environment

Proper pest control encourages responsible waste disposal, drainage maintenance and environmental sanitation.

4.0 METHODS OF CONTROLLING HOUSEHOLD PESTS AND INSECTS

Household pests and insects can be controlled using different methods depending on the type of pest, its breeding habits, the extent of infestation and the household environment.

The main methods include:

1. Preventive measures.
2. Physical and mechanical methods.
3. Biological methods.
4. Environmental management.
5. Chemical methods.
6. Integrated pest management.

4.1 Preventive Measures

Meaning

Preventive pest control refers to practices undertaken to prevent pests and insects from entering, breeding and multiplying within a household.

Prevention is usually more economical and safer than dealing with a serious infestation.

Preventive measures used in households

1. Proper food storage

- Store cereals in clean, dry, tightly sealed containers.
- Keep cooked food covered.
- Avoid leaving food exposed.
- Store dry foods in suitable cabinets.

- Regularly inspect stored food for signs of infestation.



Importance: Proper food storage prevents pests such as rats, cockroaches, ants and weevils from accessing food.

2. Proper waste disposal

- Use covered rubbish bins.
- Empty bins regularly.
- Dispose of organic waste appropriately.
- Clean waste collection areas.
- Avoid leaving food remains around the home.

Importance: Proper waste disposal removes food sources and breeding places for many pests.

3. Maintaining household cleanliness

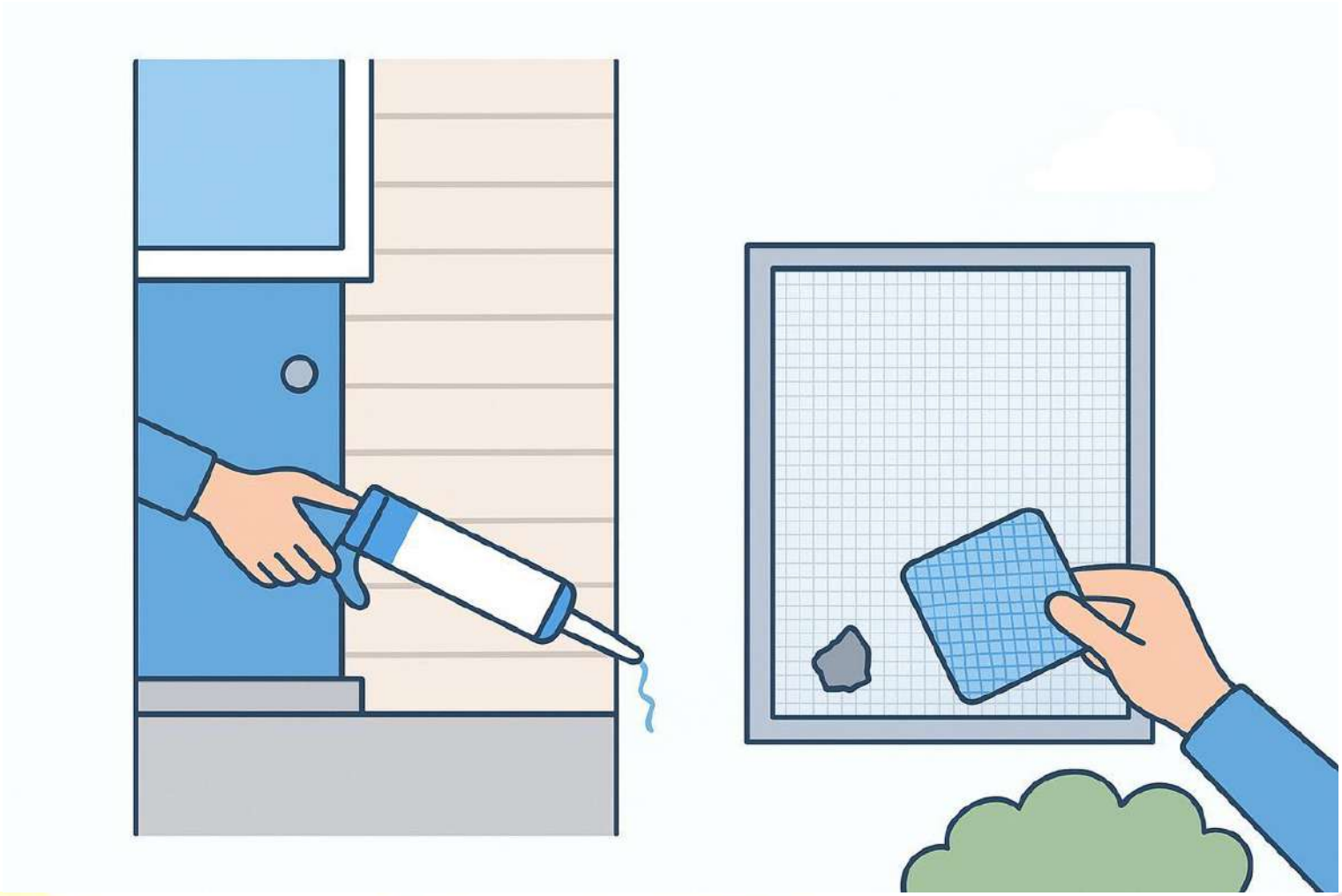
- Sweep and mop floors regularly.
- Clean kitchen surfaces after food preparation.
- Remove food crumbs.
- Clean behind refrigerators and cookers.
- Wash dirty utensils promptly.
- Keep cupboards and storage areas clean.

Importance: Cleanliness reduces food availability and hiding places for pests.

4. Sealing entry points

- Repair holes in walls.
- Seal cracks and crevices.
- Fit door sweeps where appropriate.
- Repair damaged window screens.
- Cover openings around pipes.
- Install suitable mesh on ventilation openings.

Importance: Sealing entry points prevents rodents, cockroaches and other pests from entering the house.



5. Eliminating stagnant water

- Empty containers holding unwanted water.
- Cover water storage tanks.
- Clear blocked drainage systems.
- Dispose of old tyres and containers.
- Change water in appropriate domestic containers regularly.
- Keep roof gutters clear.

Importance: This reduces mosquito breeding sites.

6. Proper laundry and bedding hygiene

- Wash bedding regularly.
- Dry bedding thoroughly.
- Inspect mattress seams.
- Avoid bringing infested furniture into the home.
- Clean animal sleeping areas.
- Inspect second-hand beds and furniture before bringing them indoors.

Importance: These measures help prevent bedbugs and fleas.

7. Proper storage of firewood and building materials

- Store firewood away from house walls.
- Keep timber dry and appropriately treated.
- Inspect wooden structures regularly.
- Avoid unnecessary accumulation of cardboard and paper.

Importance: This reduces hiding and feeding opportunities for termites and other pests.

8. Proper care of domestic animals

- Groom pets regularly.
- Maintain clean animal bedding.
- Seek veterinary advice when animals have fleas or ticks.
- Prevent pets from accessing food preparation surfaces.

Importance: Good animal hygiene reduces the risk of household infestations.

4.2 Physical and Mechanical Methods

Meaning

Physical and mechanical pest control refers to methods that physically remove, trap, exclude or destroy pests without relying primarily on chemical pesticides.

Methods of physical and mechanical control

1. Use of traps

Traps are devices designed to capture or kill pests.

Examples:

- Snap traps for rats and mice.
- Live-capture traps for rodents.
- Sticky insect traps for monitoring certain crawling and flying insects.
- Specialised bedbug interception traps.



Advantages

- Can reduce pest populations.
- Some traps do not require pesticides.
- They can help identify the location of infestations.
- They are useful for monitoring pest activity.

Limitations

- Some traps require frequent inspection.
- Poorly positioned traps may be ineffective.
- They may pose risks to children and pets if not secured.
- Traps may not eliminate an entire infestation.

2. Use of physical barriers

Physical barriers prevent pests from accessing certain areas.

Examples:

- Mosquito nets.
- Window and door screens.
- Wire mesh.
- Sealed food containers.
- Door sweeps.
- Rodent-proof storage containers.



Advantages

- Prevents pests from entering specific areas.
- Reduces dependence on pesticides.
- Provides continuous protection when properly maintained.
- Can be economical over time.

3. Heat treatment

Heat treatment involves exposing pests and their eggs to controlled high temperatures to eliminate them.

Examples:

- Professionally applied heat treatment for bedbugs.
- Washing suitable infested fabrics at temperatures recommended by the fabric-care instructions.
- Hot laundering and drying of appropriate bedding materials.

Advantages

- Can kill different life stages of certain pests.
- May reduce the need for chemical pesticides.
- Can be effective when correctly applied.

Limitations

- Requires proper temperature control.
- Some materials may be damaged by excessive heat.
- Professional treatment may be expensive.
- Ordinary household heating methods may not reach all hiding places.

4. Cold treatment

Cold treatment involves exposing suitable infested materials to sufficiently low temperatures for an appropriate period.

For example, certain small washable or non-washable infested items may be treated using a properly controlled freezer.

5. Removal and destruction of infested materials

- Remove heavily infested food items.
- Dispose of badly damaged materials safely.
- Remove and replace severely damaged wooden materials where necessary.
- Isolate infested items to prevent spreading.

6. Vacuum cleaning

Vacuum cleaners can physically remove:

- Bedbugs and some eggs from accessible surfaces.
- Fleas and their immature stages from carpets.
- Cockroaches and debris from cracks.
- Dust and pest remains from furniture.

The vacuum cleaner should be emptied and cleaned safely after use, with collected material sealed before disposal.

7. Hand picking

Hand picking involves manually removing visible pests from suitable areas.

Examples:

- Removing visible ants from food storage containers.
- Removing caterpillars from household garden plants.
- Removing visible insects from stored materials.

Appropriate protective equipment should be used where necessary.

4.3 Biological Methods

Meaning

Biological pest control refers to the use of living organisms or their biological products to reduce pest populations.

It involves using natural enemies of pests, including predators, parasites and disease-causing microorganisms specific to target pests.

Biological methods used in pest control

1. Use of predators

Predators are organisms that feed on other organisms.

Examples:

- Fish that feed on mosquito larvae in suitable managed water bodies.
- Dragonfly nymphs that feed on mosquito larvae in aquatic habitats.
- Certain spiders that feed on insects.

2. Use of parasites and parasitoids

Some organisms develop on or inside pests and eventually kill them.

Examples:

- Certain parasitic wasps attack insect eggs or larvae.
- Some parasitoids are used in controlling agricultural insect pests.

3. Use of microbial control agents

Certain microorganisms can infect and kill particular pests.

Examples:

- *Bacillus thuringiensis israelensis* (Bti) is used to control mosquito larvae in suitable breeding habitats.
- Certain entomopathogenic fungi can infect insect pests.

4. Conservation of natural enemies

This involves protecting organisms that naturally feed on harmful pests.

Examples:

- Avoiding unnecessary destruction of beneficial spiders.
- Supporting biodiversity in suitable outdoor environments.
- Reducing indiscriminate pesticide use that may kill beneficial organisms.

Advantages of biological control

1. Can reduce dependence on chemical pesticides.
2. May be environmentally sustainable when properly managed.
3. Some biological agents target specific pests.
4. May provide long-term suppression of pest populations.
5. Can help conserve ecological balance.

Limitations of biological control

1. It may take time to produce noticeable results.
2. It may not completely eliminate a serious infestation.

3. Its effectiveness depends on environmental conditions.
4. Some biological control agents require specialist knowledge.
5. It may not be suitable for every household pest.

4.4 Environmental Management

Meaning

Environmental management in pest control refers to modifying and maintaining the household surroundings to make them unsuitable for pests to live, feed and reproduce.

It focuses on eliminating the conditions that support pest survival.

Environmental methods of controlling pests

1. Proper drainage

- Clear blocked drains.
- Repair leaking pipes.
- Remove stagnant water.
- Maintain drainage channels.

This reduces mosquito breeding and damp conditions that attract some pests.

2. Proper landscaping

- Cut overgrown grass.
- Remove unnecessary vegetation close to buildings.
- Clear rubbish from compounds.
- Trim shrubs appropriately.

This reduces potential hiding places for rodents and other pests.

3. Proper sanitation

- Clean toilets and bathrooms regularly.
- Maintain clean kitchens.
- Dispose of animal waste properly.
- Keep refuse collection areas clean.

4. Proper food management

- Avoid leaving food remains overnight.
- Clean food preparation areas.
- Store food in suitable containers.
- Dispose of spoiled food appropriately.

5. Maintenance of household structures

- Repair broken doors and windows.
- Seal wall openings.

- Repair leaking roofs.
- Replace damaged screens.
- Maintain floors and walls.



Importance of environmental management

1. Reduces pest breeding sites.
2. Minimises pest entry into households.
3. Promotes household cleanliness.
4. Reduces the need for repeated pesticide application.
5. Protects human health.
6. Reduces damage to household property.
7. Improves the appearance of the home environment.

4.5 Chemical Methods

Meaning

Chemical pest control refers to the use of approved chemical substances called pesticides to kill, repel or control harmful pests and insects.

Chemical control may be necessary where other measures have not adequately controlled an infestation.

Types of pesticides used in household pest control

Type of pesticide	Target organism	Examples of use
Insecticides	Insects	Control cockroaches, mosquitoes and ants.
Rodenticides	Rats and mice	Control rodent infestations.
Larvicides	Insect larvae	Control mosquito larvae in suitable water habitats.
Acaricides	Mites and ticks	Control certain mites and ticks.
Termiticides	Termites	Protect suitable structures against termites.

Forms of household pesticides

1. Aerosols

These are pesticides dispensed as fine droplets or sprays.

Uses:

- Control certain flying insects.
- Control some crawling insects, depending on the product.

2. Dusts

These are powdered pesticide formulations applied to suitable areas according to label directions.

Uses:

- Control certain crawling insects.
- Treat appropriate cracks and crevices.

3. Baits

Baits contain an attractive food material mixed with an appropriate pesticide.

Uses:

- Control ants.
- Control cockroaches.
- Control rodents using approved rodent bait products.

4. Sprays

Liquid pesticide formulations applied using suitable spraying equipment.

Uses:

- Control certain household insects.
- Treat approved surfaces or target areas.

5. Granules

These are solid pesticide formulations used for specific target pests and approved application sites.

Advantages of chemical pest control

1. Can produce relatively quick results.
2. Some products are effective against particular pest species.

3. Can control large pest populations when correctly applied.
4. Some formulations provide residual control.
5. Can be useful in managing serious infestations.

Disadvantages of chemical pest control

1. Some pesticides are toxic to human beings.
2. They may harm pets and non-target organisms.
3. Incorrect use may contaminate food and water.
4. Some products may cause skin, eye or respiratory irritation.
5. Repeated misuse may lead to pesticide resistance.
6. Chemical residues may remain in the environment.
7. Some pesticides may be expensive.
8. Improper storage may result in accidental poisoning.

Safety precautions when using household pesticides



1. Use only legally registered products approved for the intended use.
2. Read and follow the manufacturer's label instructions.
3. Wear the protective clothing and equipment specified on the label.
4. Keep children and pets away from treated areas as directed.
5. Remove or protect food, utensils and drinking water.
6. Avoid spraying directly onto food, cooking equipment and eating surfaces.
7. Never mix different pesticides unless the label explicitly allows it.
8. Avoid eating, drinking or smoking while handling pesticides.
9. Wash hands thoroughly after handling pesticides.
10. Store pesticides in their original labelled containers.
11. Keep pesticides locked away from children and unauthorised persons.
12. Never store pesticides in beverage bottles or food containers.

13. Avoid inhaling spray mist, dust or fumes.
14. Observe the recommended re-entry period before returning to treated areas.
15. Dispose of pesticide containers according to label instructions and local regulations.
16. Seek medical assistance immediately in case of suspected poisoning.

Important safety note: In Kenya, household pesticides should be registered and used according to the relevant Pest Control Products Board (PCPB) requirements and product labels. Serious infestations should be referred to qualified pest-control professionals.

5.0 INTEGRATED PEST MANAGEMENT (IPM)

5.1 Meaning of Integrated Pest Management

Integrated Pest Management (IPM) is an approach that combines different pest control methods to prevent and manage pest populations effectively while minimising risks to human health, domestic animals and the environment.

It does not depend on one method alone. Instead, it combines prevention, monitoring, environmental management, physical control, biological control and carefully selected chemical control when necessary.

Principles of Integrated Pest Management

1. **Correct identification:** Identify the pest before choosing a control method.

2. **Monitoring:** Regularly inspect the home to establish the presence and extent of infestation.

3. **Prevention:** Remove conditions that allow pests to enter, feed and reproduce.

4. **Setting action levels:** Determine when pest activity requires control measures.

5. **Selection of appropriate methods:** Choose safe and effective methods suitable for the identified pest.

6. **Targeted chemical application:** Use pesticides only when necessary and according to approved instructions.

7. **Evaluation:** Assess whether the control measures have reduced the infestation.

5.2 Steps in Implementing IPM in a Household

Step 1: Inspect the household

Examine the kitchen, bedrooms, bathrooms, stores, compound and waste disposal areas.

Step 2: Identify the pest

Determine whether the problem involves cockroaches, bedbugs, rats, mosquitoes, termites or another pest.

Step 3: Establish the source of infestation

Look for:

- Food remains.
- Stagnant water.
- Openings in walls.
- Poorly stored food.
- Infested furniture.

- Accumulated waste.

Step 4: Determine the level of infestation

Establish whether the infestation is minor, moderate or severe.

Step 5: Apply preventive measures

Remove food sources, breeding sites and hiding places.

Step 6: Apply suitable control methods

Use appropriate physical, biological, environmental or chemical measures.

Step 7: Monitor the results

Check whether pest numbers have reduced.

Step 8: Evaluate and improve

Repeat necessary measures or seek professional assistance where the problem persists.



5.3 Advantages of Integrated Pest Management

1. Reduces unnecessary pesticide use.
2. Promotes long-term pest control.
3. Protects human health.
4. Minimises environmental contamination.
5. Reduces the risk of pesticide resistance.

6. Encourages household hygiene and sanitation.
7. Combines different control methods for better results.
8. Can reduce the long-term cost of pest management.

6.0 METHODS OF CONTROLLING SPECIFIC HOUSEHOLD PESTS AND INSECTS

Different pests require different control methods depending on their characteristics, feeding habits, breeding sites and hiding places.

6.1 Control of Cockroaches



Methods include:

1. Keeping kitchen surfaces clean.
2. Storing food in tightly covered containers.
3. Washing utensils immediately after use.
4. Emptying rubbish bins regularly.
5. Sealing cracks and crevices.
6. Repairing leaking pipes and taps.
7. Using suitable cockroach traps.
8. Applying approved cockroach baits where appropriate.
9. Seeking professional pest control for serious infestations.
10. Inspecting cupboards and dark corners regularly.

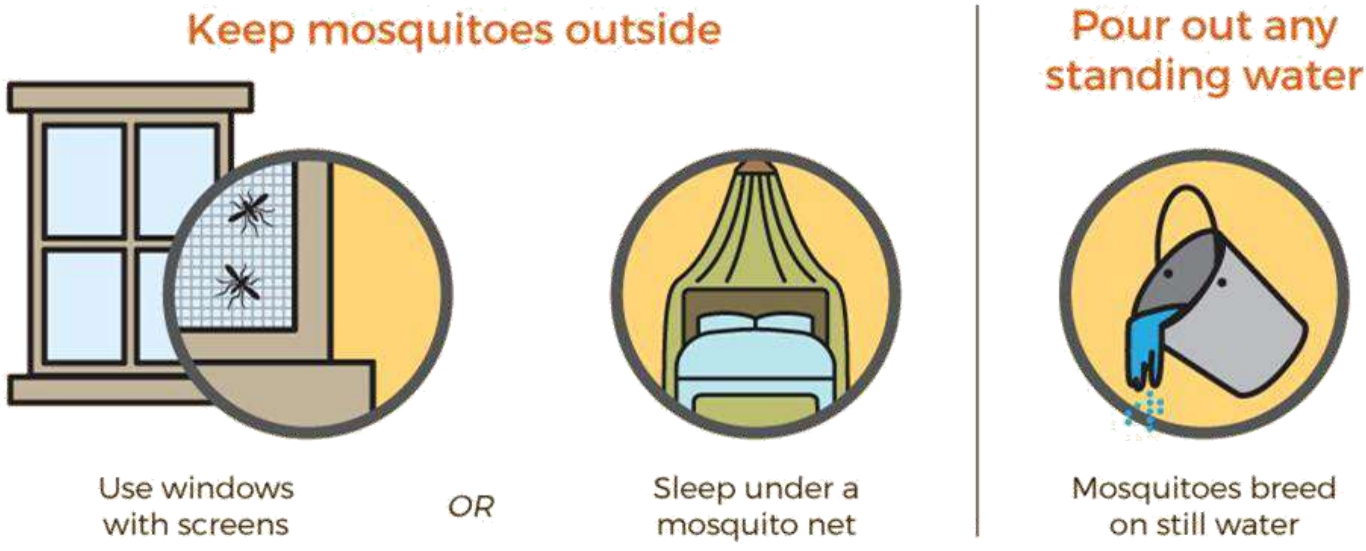
6.2 Control of Houseflies



Methods include:

1. Disposing of household waste properly.
2. Covering rubbish bins.
3. Cleaning animal waste promptly.
4. Covering food during preparation and serving.
5. Installing insect-proof screens on windows.
6. Using suitable fly traps.
7. Maintaining clean toilets and drainage systems.
8. Removing decomposing organic materials.
9. Using approved insecticides where necessary.
10. Keeping kitchen surfaces clean.

6.3 Control of Mosquitoes



Methods include:

1. Sleeping under properly fitted insecticide-treated mosquito nets.
2. Draining stagnant water where possible.
3. Covering water storage containers.
4. Emptying unwanted containers that collect rainwater.
5. Clearing blocked gutters and drains.
6. Installing window and door screens.
7. Using approved mosquito repellents according to instructions.
8. Maintaining clean household surroundings.
9. Applying appropriate larvicides to suitable water habitats under approved guidance.
10. Participating in community mosquito-control programmes.

Kenyan context: Mosquito control is particularly important in malaria-prone areas, including parts of western Kenya, the Lake Victoria basin and other malaria-endemic regions.

6.4 Control of Bedbugs



Methods include:

1. Inspecting second-hand beds and furniture before purchase.
2. Washing suitable bedding and clothing appropriately.

3. Using high-temperature drying where fabric instructions permit.
4. Vacuuming mattress seams and bed frames.
5. Sealing cracks in bed frames and furniture.
6. Using suitable mattress encasements.
7. Reducing clutter around sleeping areas.
8. Using professional heat treatment where appropriate.
9. Applying approved bedbug-control products according to label instructions.
10. Avoiding movement of infested furniture into other rooms.

Important: Bedbugs are difficult to eliminate because they hide in small spaces and may survive for extended periods without feeding. Professional integrated treatment may be necessary.

6.5 Control of Rats and Mice



Methods include:

1. Storing food in rodent-proof containers.
2. Keeping rubbish bins covered.
3. Sealing holes in walls and floors.
4. Removing unnecessary clutter.
5. Trimming vegetation around buildings.
6. Using appropriately positioned snap traps or live-capture traps.
7. Inspecting food stores regularly.
8. Avoiding accumulation of food remains.

9. Using approved rodenticides only where necessary and under strict safety precautions.
10. Seeking professional assistance for severe infestations.

6.6 Control of Termites



Methods include:

1. Keeping wooden materials dry.
2. Removing unnecessary timber and cardboard.
3. Repairing leaking roofs and pipes.
4. Keeping firewood away from house walls.
5. Avoiding direct contact between untreated wood and soil where possible.
6. Inspecting wooden structures regularly.
7. Removing and replacing severely damaged timber.
8. Sealing appropriate entry points.
9. Using approved termite treatment where necessary.
10. Seeking qualified pest-control services for structural infestations.

6.7 Control of Ants

Methods include:

1. Keeping food containers tightly closed.

2. Cleaning food spills immediately.
3. Removing food crumbs.
4. Sealing cracks and entry points.
5. Removing unnecessary food waste.
6. Locating and managing nests where appropriate.
7. Using suitable ant baits.
8. Applying approved insecticides when necessary.
9. Keeping kitchen surfaces clean.
10. Monitoring ant trails to identify their entry points.

6.8 Control of Fleas

Methods include:

1. Washing pet bedding regularly.
2. Vacuuming carpets and floors.
3. Grooming domestic animals.
4. Seeking veterinary treatment for infested pets.
5. Washing suitable household fabrics.
6. Cleaning animal resting places.
7. Using approved flea-control products suitable for the particular animal.
8. Treating the household environment where necessary.
9. Inspecting pets regularly.
10. Seeking professional assistance for severe infestations.

6.9 Control of Weevils



Methods include:

1. Drying cereals properly before storage.
2. Storing grains in clean, dry containers.
3. Using airtight or hermetic grain-storage bags.
4. Inspecting cereals regularly.

5. Cleaning storage containers before refilling them.
6. Removing heavily infested grain.
7. Avoiding mixing new grains with infested old stock.
8. Using approved grain protectants where appropriate.
9. Maintaining dry and well-ventilated storage areas.
10. Practising first-in, first-out stock rotation.

Kenyan example: Farmers and households storing maize, beans, millet and sorghum should maintain proper drying and storage practices to reduce losses caused by storage pests.

7.0 EQUIPMENT AND MATERIALS USED IN HOUSEHOLD PEST CONTROL

Different equipment and materials are used depending on the control method selected.

7.1 Equipment used in pest control















Equipment	Use
Mouse trap	Capturing or killing rats and mice.
Insect trap	Monitoring and capturing certain insects.
Vacuum cleaner	Removing accessible pests and debris.
Mosquito net	Preventing mosquito bites.
Hand sprayer	Applying approved liquid pest-control products.
Protective gloves	Protecting hands during cleaning and treatment.
Safety goggles	Protecting eyes from splashes and dust.
Suitable respirator	Protecting against specified airborne pesticide hazards.
Broom	Removing dirt and waste where pests may hide.
Mop	Cleaning floors and removing food residues.
Dustpan	Collecting dirt and waste.
Scrubbing brush	Cleaning contaminated surfaces and hard-to-reach areas.
Sealing materials	Closing cracks and openings through which pests enter.
Storage containers	Protecting food from pest infestation.
Torch	Inspecting dark areas and pest hiding places.

7.2 Materials used in pest control

1. Approved insecticides.
2. Approved rodenticides.
3. Suitable insect baits.
4. Mosquito repellents.
5. Mosquito nets.
6. Cleaning detergents.
7. Disinfectants.
8. Airtight food-storage containers.
9. Wire mesh.
10. Sealants.
11. Approved larvicides.
12. Appropriate protective clothing.

7.3 Factors to Consider When Selecting Pest-Control Equipment and Materials

1. **Type of pest:** Equipment should be suitable for the organism being controlled.

2. **Effectiveness:** The selected material should be capable of controlling the target pest.

3. **Safety:** Equipment and materials should not expose household members to unnecessary risks.

4. **Cost:** The method should be affordable and sustainable.

5. **Availability:** Equipment should be accessible within the local community.

6. **Ease of use:** Household members should be able to use the equipment correctly.

7. **Environmental impact:** The method should minimise harm to non-target organisms and the environment.

8. **Extent of infestation:** Severe infestations may require professional equipment and expertise.

9. **Durability:** Equipment should be strong and suitable for repeated use.

10. **Maintenance requirements:** Equipment should be easy to clean, inspect and maintain.

8.0 SAFETY AND HYGIENE DURING PEST-CONTROL ACTIVITIES

Pest-control activities must be conducted carefully to protect household members, pets, food, water and the environment.

8.1 General Safety Precautions

1. Identify the pest before selecting a control method.
2. Read instructions for all pest-control products.
3. Wear appropriate protective clothing.
4. Keep children away from pest-control equipment and chemicals.
5. Protect food and drinking water from contamination.
6. Avoid touching dead pests with bare hands.
7. Use appropriate tools when removing dead rodents.
8. Wash hands after handling traps or contaminated materials.
9. Clean and disinfect appropriate contaminated surfaces.
10. Dispose of dead pests and waste safely.
11. Keep treated areas appropriately ventilated.
12. Observe pesticide re-entry instructions.
13. Avoid mixing chemicals.
14. Store all pest-control products safely.
15. Report serious infestations to relevant authorities or qualified pest-control professionals.

8.2 First Aid in Case of Pesticide Exposure

Pesticide exposure may occur through swallowing, inhalation, skin contact or eye contact.

Appropriate first-aid measures include:

- Move the affected person away from the source of exposure without exposing yourself.
- For inhalation exposure, move the person into fresh air.
- For skin exposure, remove contaminated clothing and wash the affected skin with plenty of clean water.
- For eye exposure, rinse gently with clean running water for the period indicated on the product label or by medical guidance.
- If swallowed, do not induce vomiting unless instructed by a qualified medical professional or the product label.
- Seek urgent medical assistance.

- Take the pesticide container or label to the health facility if it is safe to do so.

Remember: Never attempt to treat suspected pesticide poisoning using home remedies.

9.0 PRACTICAL APPLICATION: CONTROLLING PESTS AND INSECTS AT HOUSEHOLD LEVEL

Learners should acquire practical skills in identifying, preventing and controlling household pests.

9.1 Practical Activity One: Identifying Household Pests

Materials required:

- Pictures of household pests.
- Magnifying glass.
- Observation notebook.
- Identification charts.
- Digital devices where available.

Procedure:

1. Collect pictures of common household pests.
2. Observe their body structures.
3. Identify their names.
4. Classify them as insects or non-insect pests.
5. Identify their common habitats.
6. Discuss the damage they cause.
7. Present findings to the class.

Expected outcome: Learners should be able to identify common household pests and explain their effects.

9.2 Practical Activity Two: Inspecting a Household for Pest Infestation

Materials required:

- Torch.
- Notebook.
- Gloves.
- Observation checklist.
- Camera or digital device where available.

Procedure:

1. Inspect the kitchen.
2. Examine food storage containers.
3. Inspect cupboards and cracks.
4. Check mattresses and bed frames.
5. Examine drainage areas.

6. Inspect the compound for stagnant water.
7. Record any signs of pest infestation.
8. Recommend appropriate control measures.

Expected outcome: Learners should develop observation and problem-solving skills in household pest management.

9.3 Practical Activity Three: Preparing a Pest-Prevention Plan

Learners work in groups to develop a household pest-prevention plan.

The plan should include:

- Proper waste disposal.
- Food storage.
- Cleaning schedules.
- Drainage maintenance.
- Sealing entry points.
- Inspection of household structures.
- Appropriate pest monitoring.
- Safety precautions.

9.4 Practical Activity Four: Demonstrating Physical Pest Control

Learners may demonstrate safe physical control methods using appropriate materials.

Examples:

- Setting a suitable demonstration rodent trap.
- Demonstrating the fitting of a mosquito net.
- Sealing a model wall opening.
- Preparing a clean food-storage container.
- Demonstrating the use of insect-proof window screens.

Learners should not handle dangerous pesticides as an ordinary classroom activity.

10.0 CARRYING OUT A PEST-CONTROL CAMPAIGN WITHIN THE SCHOOL COMMUNITY

10.1 Meaning of a Pest-Control Campaign

A pest-control campaign refers to an organised activity aimed at educating people and implementing measures to prevent and control harmful pests and insects within a given community.

A school pest-control campaign involves learners, teachers, school administrators and other community members working together to improve sanitation and reduce pest infestations.

10.2 Objectives of a School Pest-Control Campaign

1. To educate learners about common household pests.
2. To promote proper waste disposal.

3. To identify and eliminate mosquito breeding sites.
4. To promote proper food storage.
5. To encourage personal and environmental hygiene.
6. To reduce pest-related health risks.
7. To promote responsible use of pest-control methods.
8. To encourage community participation in environmental sanitation.

10.3 Steps in Organising a School Pest-Control Campaign

Step 1: Identify the problem

Learners and teachers inspect the school environment to identify common pests.

Examples:

- Mosquitoes around stagnant water.
- Houseflies around waste collection areas.
- Rats around food stores.
- Cockroaches in kitchen areas.

Step 2: Form a campaign committee

Select learners, teachers and other relevant school representatives to coordinate the campaign.

Step 3: Set objectives

Establish what the campaign intends to achieve.

Step 4: Prepare a work plan

Identify:

- Activities to be performed.
- People responsible.
- Materials required.
- Time allocated.
- Areas to be covered.

Step 5: Mobilise resources

Collect suitable materials such as:

- Rubbish collection bags.
- Covered waste bins.
- Brooms.
- Mops.
- Gloves.
- Posters.

- Educational charts.
- Observation sheets.

Step 6: Create awareness

Educate the school community through:

- Posters.
- Assemblies.
- Class discussions.
- Demonstrations.
- Educational talks.
- Digital presentations.

Step 7: Implement control activities

Activities may include:

- Removing unwanted containers that collect water.
- Cleaning drainage channels under supervision.
- Collecting and disposing of litter.
- Cleaning food preparation and eating areas.
- Covering waste bins.
- Inspecting food stores.
- Reporting serious pest infestations.

Step 8: Observe safety measures

- Wear suitable protective clothing.
- Avoid handling dangerous chemicals.
- Avoid direct contact with dead rodents.
- Use tools correctly.
- Work under teacher supervision.
- Ensure that waste is disposed of safely.

Step 9: Monitor the campaign

Check whether the identified pest problems have reduced.

Step 10: Evaluate and report

Prepare a report showing:

- Activities completed.
- Resources used.
- Problems encountered.

- Achievements.
- Recommendations for future improvement.

10.4 Roles of Different Participants in a School Pest-Control Campaign

Participant	Responsibilities
School administration	Provides leadership and resources.
Teachers	Guide and supervise campaign activities.
Learners	Participate in sanitation and awareness activities.
School cooks	Maintain kitchen hygiene and safe food storage.
School support staff	Maintain cleanliness and report pest problems.
Parents	Support sanitation practices at home.
Public health officers	Provide technical guidance and health education.
Qualified pest-control professionals	Handle specialised pest-control treatments.

10.5 Importance of a School Pest-Control Campaign

1. Promotes a clean school environment.
2. Reduces pest breeding sites.
3. Improves food hygiene.
4. Promotes awareness of disease prevention.
5. Develops teamwork and cooperation.
6. Encourages responsible citizenship.
7. Develops leadership skills.
8. Promotes environmental conservation.
9. Develops practical problem-solving skills.
10. Encourages learners to apply Home Science knowledge in everyday life.

11.0 COMMON CHALLENGES IN HOUSEHOLD PEST CONTROL AND THEIR SOLUTIONS

Challenge	Suggested solution
Lack of knowledge about pests	Provide household education and awareness.
Poor waste disposal	Use covered bins and regular waste collection.
Stagnant water	Improve drainage and remove water-holding containers.
High cost of professional treatment	Prioritise preventive and low-cost physical methods.
Pesticide misuse	Follow approved product instructions and seek expert guidance.
Repeated pest infestation	Identify and eliminate the source of infestation.
Poor food storage	Use suitable sealed containers.
Inadequate equipment	Acquire appropriate and affordable equipment.
Resistance to certain pesticides	Use integrated pest management and avoid unnecessary pesticide application.
Poor cooperation among household members	Share responsibilities and establish cleaning routines.
Hidden pest breeding areas	Conduct regular household inspections.

Neighbourhood-wide infestations	Organise coordinated community pest-control activities.

12.0 SUMMARY OF KEY TERMS

Term	Meaning
Pest	An organism that causes harm, damage or nuisance.
Insect	An invertebrate animal belonging to class Insecta.
Infestation	The presence and multiplication of pests in an area.
Pest control	Measures used to prevent, reduce or eliminate pests.
Insecticide	A substance used to control insects.
Rodenticide	A substance used to control rodents.
Larvicide	A substance used to control insect larvae.
Biological control	Using living organisms or their biological products to control pests.
Physical control	Removing or excluding pests using physical methods.
Environmental management	Modifying surroundings to make them unsuitable for pests.
Integrated Pest Management	Combining different methods to manage pests safely and effectively.
Vector	An organism that transmits disease-causing agents between hosts.
Breeding site	A place where pests reproduce and develop.
Sanitation	Practices that maintain cleanliness and protect health.
Contamination	Introduction of harmful substances or microorganisms into food or other materials.

REVISION QUESTIONS

GRADE 11 HOMESCIENCE

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.3: CONTROL OF HOUSEHOLD PESTS AND INSECTS

SECTION A – 30 MARKS

SECTION B – 50 MARKS

Instructions to learners

1. Answer all questions in Section A.
2. Choose the correct answer from the four alternatives provided.
3. Answer all questions in Section B.
4. Give relevant examples where necessary.

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Choose the correct answer in each question.

1. Which of the following best describes a household pest?

A. An organism that is always beneficial to human beings.

B. An organism that causes harm, damage or nuisance in a household.

C. An organism that lives exclusively in forests.

D. An organism that improves household sanitation.

2. Which of the following household pests is a mammal rather than an insect?

A. Cockroach.

B. Mosquito.

C. Housefly.

D. Rat.

3. Which of the following is a common characteristic of insects?

A. They have four pairs of legs.

B. They have three pairs of legs.

C. They have five body regions.

D. They have backbones.

4. Which household pest is commonly associated with the transmission of malaria?

A. Bedbug.

B. Termite.

C. Female Anopheles mosquito.

D. Housefly.

5. Which of the following household pests commonly contaminates food by moving between refuse and food preparation surfaces?

A. Housefly.

B. Termite.

C. Bedbug.

D. Flea.

6. The scientific name of the common housefly is:

A. *Cimex lectularius*.

B. *Musca domestica*.

C. *Sitophilus zeamais*.

D. *Rattus norvegicus*.

7. Which household pest feeds mainly on human blood and commonly hides in mattress seams?

A. Weevil.

B. Termite.

C. Bedbug.

D. Ant.

8. Which of the following pests causes damage to wooden household structures by feeding on cellulose?

A. Mosquito.

B. Termite.

C. Flea.

D. Housefly.

9. Which of the following is a major sign of rodent infestation?

A. Mud tubes on walls.

B. Droppings and gnaw marks.

C. Blood stains on mattresses.

D. Mosquito larvae in water.

10. The maize weevil is particularly associated with the destruction of:

A. Stored cereals.

B. Wooden furniture.

C. Bedding materials.

D. Electrical cables.

11. Why should household food be stored in tightly covered containers?

A. To increase moisture content.

B. To encourage pest breeding.

C. To prevent access by pests.

D. To increase food contamination.

12. Which of the following practices helps control mosquito breeding?

A. Leaving water containers uncovered.

B. Allowing stagnant water to accumulate.

C. Emptying unwanted containers that collect water.

D. Blocking drainage channels.

13. Which of the following is an example of physical pest control?

A. Applying an insecticide.

B. Installing window screens.

C. Using a chemical rodenticide.

D. Spraying a pesticide.

14. The use of fish that feed on mosquito larvae is an example of:

A. Chemical control.

B. Physical control.

C. Biological control.

D. Mechanical control.

15. Which of the following is an example of environmental pest management?

A. Leaving rubbish around the home.

B. Maintaining proper drainage.

C. Keeping food uncovered.

D. Allowing vegetation to overgrow.

16. Which equipment is commonly used to capture rats and mice?

A. Electric iron.

B. Mouse trap.

C. Blender.

D. Vacuum flask.

17. Which of the following is a major advantage of using mosquito nets?

A. They encourage mosquito breeding.

B. They prevent mosquitoes from accessing sleeping individuals.

C. They increase stagnant water.

D. They eliminate all household pests.

18. Which of the following best describes an insecticide?

A. A substance used to kill or control insects.

B. A substance used to preserve wooden furniture.

C. A material used to store food.

D. A substance used to attract beneficial insects only.

19. Which pesticide is specifically intended for controlling rodents?

A. Fungicide.

B. Herbicide.

C. Rodenticide.

D. Larvicide.

20. Which of the following is a disadvantage of chemical pest control?

A. It always eliminates all pests permanently.

B. It may cause poisoning when improperly used.

C. It cannot affect non-target organisms.

D. It never contaminates the environment.

21. Which of the following is an appropriate precaution when applying household pesticides?

A. Storing pesticides in beverage bottles.

B. Spraying directly onto uncovered food.

C. Reading and following the product label.

D. Allowing children to handle pesticides.

22. Integrated Pest Management involves:

A. Using chemical pesticides exclusively.

B. Combining different suitable pest-control methods.

C. Ignoring minor pest infestations.

D. Destroying all insects in the environment.

23. Which of the following is a biological control agent used against mosquito larvae?

A. *Bacillus thuringiensis israelensis*.

B. Sodium chloride.

C. Ordinary cooking oil.

D. Household detergent.

24. Which of the following is an effective way of controlling bedbugs?

A. Leaving mattresses outside without inspection.

B. Moving infested furniture to another bedroom.

C. Inspecting, cleaning and appropriately treating infested bedding and furniture.

D. Spraying all household food items.

25. Which of the following practices helps prevent weevil infestation in stored maize?

A. Storing damp maize.

B. Mixing infested maize with clean maize.

C. Drying grains properly before storage.

D. Leaving grain containers uncovered.

26. Why should firewood be stored away from wooden household structures?

A. To encourage termite movement.

B. To reduce the risk of termite infestation.

C. To increase household moisture.

D. To attract rodents.

27. Which of the following is an appropriate method of disposing of household waste?

A. Throwing waste into drainage channels.

B. Leaving waste uncovered in the kitchen.

C. Using covered rubbish bins and disposing of waste regularly.

D. Accumulating waste behind the house.

28. What is the main purpose of inspecting a household for pests?

A. To increase the number of pests.

B. To identify pest presence and possible breeding sites.

C. To encourage chemical pesticide use.

D. To eliminate the need for sanitation.

29. Which of the following is an important objective of a school pest-control campaign?

A. Encouraging indiscriminate pesticide use.

B. Promoting environmental sanitation and pest prevention.

C. Allowing stagnant water to accumulate.

D. Discouraging community participation.

30. Which of the following best demonstrates responsible pest management?

A. Using any available chemical without checking its instructions.

B. Ignoring pest infestation until it becomes severe.

C. Identifying the pest and selecting appropriate safe control methods.

D. Applying several pesticides simultaneously.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer ALL questions.

QUESTION 1: INTRODUCTION TO HOUSEHOLD PESTS AND INSECTS (8 MARKS)

a) Define the term household pest. (2 marks)

b) Differentiate between a pest and an insect. (2 marks)

c) Identify four common household pests found in Kenyan homes. (4 marks)

QUESTION 2: TYPES AND EFFECTS OF HOUSEHOLD PESTS (8 MARKS)

a) State four characteristics of cockroaches. (4 marks)

b) Explain four harmful effects of household pests and insects on family members and property. (4 marks)

QUESTION 3: IMPORTANCE AND PREVENTION OF HOUSEHOLD PESTS (8 MARKS)

a) Explain four reasons why controlling household pests and insects is important. (4 marks)

b) Describe four preventive measures that can be adopted to minimise household pest infestation. (4 marks)

QUESTION 4: METHODS OF PEST AND INSECT CONTROL (10 MARKS)

a) Explain the following methods of controlling household pests:

i. Physical control. (2 marks)

ii. Biological control. (2 marks)

iii. Environmental management. (2 marks)

b) State four safety precautions that should be observed when using chemical pesticides in a household. (4 marks)

QUESTION 5: PRACTICAL APPLICATION OF HOUSEHOLD PEST CONTROL (8 MARKS)

A family in Kilgoris has been experiencing an increase in cockroaches, houseflies and mosquitoes. The family also stores maize and beans in containers that are not properly covered.

a) Identify four factors that may be contributing to the increase in household pests. (4 marks)

b) Suggest four practical measures the family can adopt to control the pests. (4 marks)

QUESTION 6: INTEGRATED PEST MANAGEMENT AND SCHOOL CAMPAIGNS (8 MARKS)

a) Define Integrated Pest Management (IPM). (2 marks)

b) State three activities that learners can undertake during a school pest-control campaign. (3 marks)

c) Explain three benefits of conducting pest-control campaigns within the school community. (3 marks)

MARKING SCHEME

GRADE 11 HOME SCIENCE

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.3: CONTROL OF HOUSEHOLD PESTS AND INSECTS

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	D
3	B
4	C
5	A
6	B
7	C
8	B
9	B
10	A
11	C
12	C
13	B
14	C
15	B
16	B
17	B
18	A
19	C
20	B
21	C
22	B
23	A
24	C

25	C
26	B
27	C
28	B
29	B
30	C

Section A: 30 marks

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: INTRODUCTION TO HOUSEHOLD PESTS AND INSECTS (8 MARKS)

a) Define the term household pest. (2 marks)

A household pest is an organism that invades or lives in a home and causes harm, damage, disease, contamination or nuisance to people, food, household property or the environment.

- Organism that lives in or invades a household – 1 mark.
- Causes harm, damage, disease, contamination or nuisance – 1 mark.

b) Differentiate between a pest and an insect. (2 marks)

- Pest: An organism considered harmful or unwanted because it causes damage, disease, contamination or nuisance. (1 mark)
- Insect: A small invertebrate animal with three pairs of legs, a body divided into three main parts (head, thorax and abdomen), and usually one or two pairs of wings. (1 mark)

c) Identify four common household pests found in Kenyan homes. (4 marks)

Award 1 mark for each correct response.

1. Cockroaches.
2. Houseflies.
3. Mosquitoes.
4. Rats.
5. Mice.
6. Bedbugs.
7. Fleas.
8. Termites.
9. Ants.
10. Stored-grain weevils.
11. Ticks.
12. Lice.

Any four correct responses. (4 × 1 = 4 marks)

QUESTION 2: TYPES AND EFFECTS OF HOUSEHOLD PESTS (8 MARKS)

a) State four characteristics of cockroaches. (4 marks)

Award 1 mark for each correct response.

1. They have flattened, oval-shaped bodies.
2. They have three pairs of jointed legs.
3. They have long antennae.
4. They have a pair of compound eyes.
5. They have a hard outer covering called an exoskeleton.
6. Most have two pairs of wings, although some species have reduced or no functional wings.
7. They move quickly and hide in dark, warm and damp places.
8. They are mainly active at night.
9. They have chewing mouthparts.
10. They reproduce by laying eggs enclosed in egg cases called oothecae.

Any four correct characteristics. (4 × 1 = 4 marks)

b) Explain four harmful effects of household pests and insects on family members and property. (4 marks)

Award 1 mark for each correct explanation.

1. Disease transmission: Mosquitoes transmit malaria, while other pests may transmit or contribute to the spread of diseases.
2. Food contamination: Houseflies and cockroaches contaminate food and food preparation surfaces with disease-causing microorganisms.
3. Food destruction: Weevils and other storage pests damage stored maize, beans and other cereals.
4. Damage to property: Termites destroy wooden furniture, doors, floors and other household structures.
5. Bites and irritation: Bedbugs, fleas and mosquitoes cause bites, itching and discomfort.
6. Allergic reactions: Cockroach droppings, shed body parts and other pest materials may trigger allergic reactions.
7. Economic losses: Families spend money replacing damaged items and controlling infestations.
8. Disturbed sleep: Mosquitoes and bedbugs interfere with proper sleeping and resting.
9. Psychological discomfort: Pest infestations may cause fear, stress and embarrassment.

Any four correctly explained effects. (4 × 1 = 4 marks)

QUESTION 3: IMPORTANCE AND PREVENTION OF HOUSEHOLD PESTS (8 MARKS)

a) Explain four reasons why controlling household pests and insects is important. (4 marks)

Award 1 mark for each correct explanation.

1. Prevents diseases: Controlling pests reduces exposure to disease-causing organisms and disease transmission.
2. Protects food: It prevents contamination and destruction of food stored in the household.

3. Protects property: It prevents damage to furniture, clothing, buildings and other household materials.
4. Promotes personal hygiene: It helps maintain clean and healthy household surroundings.
5. Reduces medical expenses: It lowers the risk of pest-related illnesses and associated treatment costs.
6. Improves comfort: It reduces bites, irritation, unpleasant smells and disturbances.
7. Prevents economic losses: It reduces food wastage and the cost of replacing damaged property.
8. Promotes a healthy environment: It helps maintain safe and hygienic living conditions.

Any four correctly explained reasons. (4 × 1 = 4 marks)

b) Describe four preventive measures that can be adopted to minimise household pest infestation. (4 marks)

Award 1 mark for each correctly described measure.

1. Proper waste disposal: Place household rubbish in covered bins and dispose of it regularly to avoid attracting pests.
2. Proper food storage: Store food in clean, tightly covered containers to prevent access by insects and rodents.
3. Maintaining cleanliness: Clean kitchens, cupboards and food preparation surfaces regularly to remove food remains.
4. Eliminating stagnant water: Empty containers that collect water and clear blocked drainage to reduce mosquito breeding.
5. Repairing structural openings: Seal cracks, holes and gaps in walls, doors and windows to prevent pests from entering.
6. Installing protective screens: Fit window and door screens to prevent insects from entering the house.
7. Proper grain storage: Dry cereals thoroughly and store them in suitable pest-resistant containers.
8. Managing vegetation: Trim overgrown vegetation and remove unnecessary rubbish around the home.
9. Proper drainage: Ensure wastewater flows away properly to prevent damp conditions and breeding sites.
10. Regular inspection: Check food stores, furniture, bedding and household structures for signs of infestation.

Any four correctly described measures. (4 × 1 = 4 marks)

QUESTION 4: METHODS OF PEST AND INSECT CONTROL (10 MARKS)

a) Explain the following methods of controlling household pests.

i. Physical control. (2 marks)

Physical control involves using physical barriers or devices to prevent pests from entering, reaching or damaging household property.

Examples include:

- Installing mosquito nets.
- Fitting window and door screens.
- Using rat and mouse traps.

- Covering food containers.
- Using fly screens.
- Removing pests manually where safe.

Award:

- Correct explanation of physical control – 1 mark.
- One relevant example – 1 mark.

ii. Biological control. (2 marks)

Biological control involves using natural enemies or biological agents to reduce pest populations.

Examples include:

- Keeping fish that feed on mosquito larvae in suitable water bodies.
- Using Bacillus thuringiensis israelensis (Bti) to control mosquito larvae.
- Encouraging natural predators of harmful pests.
- Using natural parasites that attack specific pests.

Award:

- Correct explanation – 1 mark.
- One relevant example – 1 mark.

iii. Environmental management. (2 marks)

Environmental management involves modifying household surroundings and conditions to make them unsuitable for pest breeding, survival and multiplication.

Examples include:

- Proper waste disposal.
- Clearing stagnant water.
- Maintaining proper drainage.
- Cleaning food preparation areas.
- Removing unnecessary rubbish.
- Keeping compounds and surroundings clean.

Award:

- Correct explanation – 1 mark.
- One relevant example – 1 mark.

b) State four safety precautions that should be observed when using chemical pesticides in a household. (4 marks)

Award 1 mark for each correct response.

1. Read and follow the manufacturer's instructions on the pesticide label.

2. Wear appropriate protective clothing, such as gloves, masks and protective garments as directed by the label.
3. Keep pesticides away from children and pets.
4. Store pesticides in their original, clearly labelled containers.
5. Never transfer pesticides into beverage or food containers.
6. Avoid eating, drinking or smoking while applying pesticides.
7. Avoid spraying pesticides directly onto food, utensils or food preparation surfaces.
8. Ensure adequate ventilation when using products indoors, as instructed.
9. Wash hands and exposed skin thoroughly after application.
10. Keep people and animals away from treated areas for the recommended period.
11. Dispose of empty pesticide containers safely according to label instructions and local requirements.
12. Do not mix different pesticides unless the manufacturer specifically permits it.

Any four correct precautions. (4 × 1 = 4 marks)

QUESTION 5: PRACTICAL APPLICATION OF HOUSEHOLD PEST CONTROL (8 MARKS)

a) Identify four factors that may be contributing to the increase in household pests. (4 marks)

Award 1 mark for each correct response.

1. Poor disposal of household waste.
2. Food being stored in uncovered containers.
3. Food remains and crumbs being left on surfaces.
4. Poor kitchen and household hygiene.
5. Stagnant water around the home, providing mosquito breeding sites.
6. Blocked or poorly maintained drainage systems.
7. Overgrown vegetation around the house.
8. Cracks and openings in walls, floors and doors that allow pests to enter.
9. Damp and poorly ventilated household areas.
10. Inadequate inspection and control of existing pest infestations.
11. Improper storage of maize and beans.
12. Failure to clean cupboards and food storage areas regularly.

Any four correct responses. (4 × 1 = 4 marks)

b) Suggest four practical measures the family can adopt to control the pests. (4 marks)

Award 1 mark for each correct response.

1. Store maize and beans in clean, dry, tightly covered and pest-resistant containers.
2. Clean kitchen surfaces, cupboards and floors regularly.
3. Dispose of household waste in covered bins and empty them frequently.

4. Remove stagnant water and empty containers that collect rainwater.
5. Install mosquito nets and window screens.
6. Use appropriate traps to capture rats and mice where necessary.
7. Seal cracks and holes that provide entry points for pests.
8. Inspect stored grains regularly and remove infested grains safely.
9. Use approved pesticides according to the manufacturer's instructions when necessary.
10. Maintain proper drainage around the home.
11. Clear overgrown vegetation and unnecessary rubbish around the house.
12. Seek professional pest-control services where infestation is severe.

Any four practical measures. (4 × 1 = 4 marks)

QUESTION 6: INTEGRATED PEST MANAGEMENT AND SCHOOL CAMPAIGNS (8 MARKS)

a) Define Integrated Pest Management (IPM). (2 marks)

Integrated Pest Management is an approach to pest control that combines different suitable methods, such as environmental, physical, biological and carefully selected chemical controls, to manage pests effectively while minimising risks to people, property and the environment.

- Combining different appropriate pest-control methods – 1 mark.
- Managing pests effectively while minimising risks to people and the environment – 1 mark.

b) State three activities that learners can undertake during a school pest-control campaign. (3 marks)

Award 1 mark for each correct response.

1. Cleaning classrooms, kitchens and school surroundings.
2. Collecting and properly disposing of litter.
3. Emptying containers holding stagnant water.
4. Clearing blocked drainage channels under appropriate supervision.
5. Inspecting school buildings for signs of pest infestation.
6. Covering food and ensuring proper food storage.
7. Creating posters and displaying messages about pest prevention.
8. Educating fellow learners on proper hygiene and sanitation.
9. Participating in supervised environmental clean-up activities.
10. Reporting pest breeding sites to teachers or school management.

Any three correct responses. (3 × 1 = 3 marks)

c) Explain three benefits of conducting pest-control campaigns within the school community. (3 marks)

Award 1 mark for each correctly explained benefit.

1. Prevents diseases: Reduces exposure to disease-causing pests and improves the health of learners and staff.

2. Promotes hygiene: Encourages learners to maintain clean classrooms, kitchens and school surroundings.
3. Creates awareness: Educates learners and community members on the causes, effects and prevention of pest infestation.
4. Protects school property: Helps prevent damage to furniture, buildings, books and stored food.
5. Encourages teamwork: Promotes cooperation and shared responsibility among learners, teachers and the community.
6. Reduces pest breeding: Eliminates potential breeding sites and food sources for pests.
7. Promotes environmental responsibility: Encourages proper waste disposal and care for the school environment.

STRAND 1.0: HOME MANAGEMENT

SUB-STRAND 2.4: LAUNDERING OF FABRICS

1.0 INTRODUCTION TO LAUNDERING OF FABRICS

Laundering is an important aspect of home management. It involves cleaning, drying and finishing clothes and other household textile articles to maintain cleanliness, personal hygiene, appearance and durability.

In everyday life, people wear different types of clothes made from cotton, wool, silk, linen, polyester, nylon and other fibres. These fabrics have different characteristics. Some can withstand vigorous washing, while others require gentle handling.

For example:

- Cotton school uniforms can generally be washed using ordinary washing methods.
- Woollen sweaters require gentle washing to prevent shrinking and distortion.
- Silk garments require delicate handling to prevent damage to their fibres.
- Polyester garments are generally easy to wash and dry.

The correct laundering procedure depends on the type of fibre, fabric construction, colour, degree of soiling and manufacturer's care instructions.

1.1 Meaning of Laundering

Laundering is the process of cleaning clothes and household textile articles by removing dirt, stains, sweat, body oils and other unwanted substances through washing, rinsing, drying and finishing.

1.2 Meaning of Laundry

Laundry refers to clothes and household textile articles that require washing or have been washed.

Examples include:

1. School uniforms.
2. Shirts, trousers and dresses.
3. Bedsheets and pillowcases.
4. Towels and face towels.
5. Tablecloths and serviettes.
6. Curtains.
7. Woollen sweaters.
8. Kitchen towels and aprons.

1.3 Meaning of Fabric

A fabric is a material made by weaving, knitting, bonding or other methods of combining fibres or yarns to produce textile materials.

Examples:

- Cotton fabric.
- Woollen fabric.

- Silk fabric.
- Linen fabric.
- Polyester fabric.
- Nylon fabric.

2.0 IMPORTANCE OF LAUNDERING FABRICS

Laundering is necessary for maintaining personal cleanliness and proper household management.

The importance of laundering includes:

1. **Maintaining personal hygiene:** Washing removes sweat, dirt, body oils and microorganisms that may accumulate on clothes during daily activities.

2. **Preventing unpleasant body odours:** Sweat and bacteria can produce unpleasant smells. Laundering removes substances responsible for these odours.

3. **Preventing the spread of infections:** Proper washing, especially of towels, underwear and bedding, helps reduce the spread of some disease-causing microorganisms.

4. **Improving personal appearance:** Clean and properly finished clothes make a person look neat, presentable and respectable.

5. **Increasing the lifespan of garments:** Correct washing prevents unnecessary damage to fibres and helps garments last longer.

6. **Removing stains:** Laundering helps eliminate stains caused by food, mud, sweat, grease, ink and other substances.

7. **Maintaining fabric quality:** Appropriate washing methods help preserve the colour, texture, shape and strength of fabrics.

8. **Promoting comfort:** Clean clothes feel fresh and comfortable against the skin.

9. **Protecting household articles:** Regular cleaning of bedsheets, curtains, towels and tablecloths maintains a clean living environment.

10. **Promoting self-reliance:** Knowledge of laundering enables individuals to care for their own clothes and household textiles.

11. **Saving money:** Proper fabric care reduces the need for frequent replacement of damaged garments.

12. **Promoting environmental responsibility:** Appropriate use of water, detergents and energy reduces unnecessary wastage and environmental pollution.

3.0 METHODS OF LAUNDERING FABRICS

Different methods are used to launder fabrics depending on their characteristics, construction and level of soiling.

The main methods include:

1. Kneading and squeezing.
2. Friction.
3. Rubbing.
4. Machine washing.

3.1 Kneading and Squeezing Method



Meaning

Kneading and squeezing is a hand-laundering method in which a garment is gently pressed, folded, compressed and released repeatedly in soapy water to loosen and remove dirt.

It is suitable for delicate fabrics that may be damaged by vigorous rubbing.

Procedure

1. Sort the garments according to colour, fabric type and degree of soiling.
2. Read the care labels to determine the recommended washing procedure.
3. Fill a clean basin with water at the appropriate temperature.
4. Add a suitable detergent and mix until it dissolves.
5. Immerse the garment completely in the solution.
6. Gently press and release the fabric repeatedly using both hands.
7. Fold and unfold the garment while gently squeezing it to allow the detergent solution to penetrate the fibres.
8. Pay attention to areas that are more soiled, such as collars and cuffs.
9. Remove the soapy water.
10. Rinse the garment in clean water until all detergent is removed.
11. Gently squeeze out excess water without twisting the fabric.
12. Dry the garment according to its care label.

Suitable fabrics and articles

- Woollen garments.
- Silk garments labelled for hand washing.
- Delicate knitted garments.
- Fine knitted fabrics.
- Some viscose garments, where the care label permits hand washing.

Advantages

1. Gentle on delicate fibres.
2. Reduces stretching and distortion.
3. Gives the user control over the washing process.
4. Requires little equipment.
5. Uses relatively little water when done carefully.
6. Suitable for garments that cannot be machine washed.

Disadvantages

1. It is time-consuming.
2. It requires physical effort.
3. It may not remove deeply embedded dirt as effectively as other methods.
4. It may be unsuitable for heavily soiled and durable fabrics.

3.2 Friction Method



Meaning

Friction is a method of laundering in which two surfaces of a fabric are rubbed against each other or against a suitable washing surface to loosen and remove dirt.

The rubbing action produces friction that helps detach dirt particles from fabric fibres.

Procedure

1. Sort the clothes according to colour and fabric type.
2. Examine the garments for stains and heavily soiled areas.
3. Prepare a suitable detergent solution.
4. Immerse the garment in the solution.
5. Hold the soiled part of the garment firmly.
6. Rub the fabric gently against itself using the hands.
7. Concentrate on areas such as collars, cuffs, knees and underarms.

8. Avoid excessive force, especially on delicate fabrics.
9. Rinse thoroughly in clean water.
10. Squeeze out excess water carefully.
11. Dry according to the care label.

Suitable fabrics

- Durable cotton fabrics.
- Some linen fabrics.
- Strong work clothes.
- Heavily soiled washable garments.

Advantages

1. Removes dirt effectively from moderately soiled areas.
2. Does not require specialised equipment.
3. Can be used to clean specific sections of a garment.
4. Allows the user to concentrate on stubborn dirt.

Disadvantages

1. Excessive friction can damage fibres.
2. It can cause colour fading.
3. It may cause pilling on some fabrics.
4. It is labour-intensive.

3.3 Rubbing Method



Meaning

Rubbing is a laundering method in which a garment is rubbed against a suitable surface, such as a washboard, or between the hands to remove dirt.

It involves applying mechanical pressure to loosen dirt from the fabric.

Procedure

1. Sort the garments appropriately.
2. Prepare water and a suitable detergent solution.
3. Wet the garment thoroughly.
4. Apply detergent to the soiled section if necessary.
5. Place the garment on a smooth, clean washing surface or washboard.
6. Rub the soiled area gently using the hands.
7. Avoid excessive pressure that could damage the fabric.
8. Rinse the garment thoroughly.
9. Remove excess water carefully.
10. Dry appropriately.

Suitable fabrics

- Strong cotton garments.
- Durable linen articles.
- Some heavy-duty household fabrics.

Advantages

1. Effective in removing stubborn dirt from strong fabrics.
2. Useful when washing equipment is unavailable.
3. Allows attention to specific dirty areas.
4. Relatively inexpensive.

Disadvantages

1. Can cause fabric wear and tear.
2. May weaken delicate fibres.
3. Requires physical effort.
4. Can cause colour loss if applied excessively.

Important distinction between friction and rubbing

Friction describes the resistance produced when surfaces move against each other. Rubbing is a practical washing action that uses friction to remove dirt. The terms are closely related, although rubbing commonly refers to a particular physical action.

3.4 Machine Washing Method



Meaning

Machine washing is the process of cleaning clothes using an electric or manually operated washing machine. The machine uses water, detergent and mechanical movement to remove dirt from fabrics.

It is commonly used in homes, hotels, hospitals, schools and commercial laundry establishments.

Types of washing machines

A. Top-loading washing machine

- Clothes are loaded through an opening at the top.
- The machine uses an agitator or impeller to move clothes through water.
- It is convenient for loading and unloading.
- Some models use relatively large quantities of water.

B. Front-loading washing machine

- Clothes are loaded through a door at the front.
- The drum rotates, lifting and dropping clothes through the washing solution.
- Many models are water- and energy-efficient.
- They are generally suitable for different washing programmes.

Procedure for machine washing



1. Sort clothes according to colour, fabric type and washing requirements.
2. Check the pockets and remove all objects.
3. Close zips and fasten buttons where appropriate.
4. Read the garment care labels.
5. Separate delicate garments from heavy and rough materials.
6. Place the clothes in the washing machine without overloading it.
7. Measure the correct quantity of detergent according to the manufacturer's instructions.
8. Put detergent in the appropriate compartment or drum, as directed.
9. Select the appropriate washing programme.
10. Choose the recommended water temperature.
11. Start the machine.
12. Allow the washing cycle to complete.
13. Remove the clothes promptly after washing.
14. Shake out garments and reshape them where necessary.
15. Dry them according to their care labels.
16. Clean the washing machine when necessary and leave it ventilated.

Advantages of machine washing

1. Saves time and physical effort.
2. Can wash several garments simultaneously.
3. Provides consistent washing action.
4. Some machines offer special programmes for delicate fabrics.
5. Improves efficiency when handling large quantities of laundry.

6. Some models use less water and energy than traditional washing methods.

Disadvantages of machine washing

1. Requires electricity for most automatic machines.
2. Initial purchase and maintenance costs may be high.
3. Incorrect settings can damage garments.
4. Overloading reduces washing effectiveness.
5. Some delicate fabrics cannot be machine washed.
6. Some machines consume considerable water and electricity.

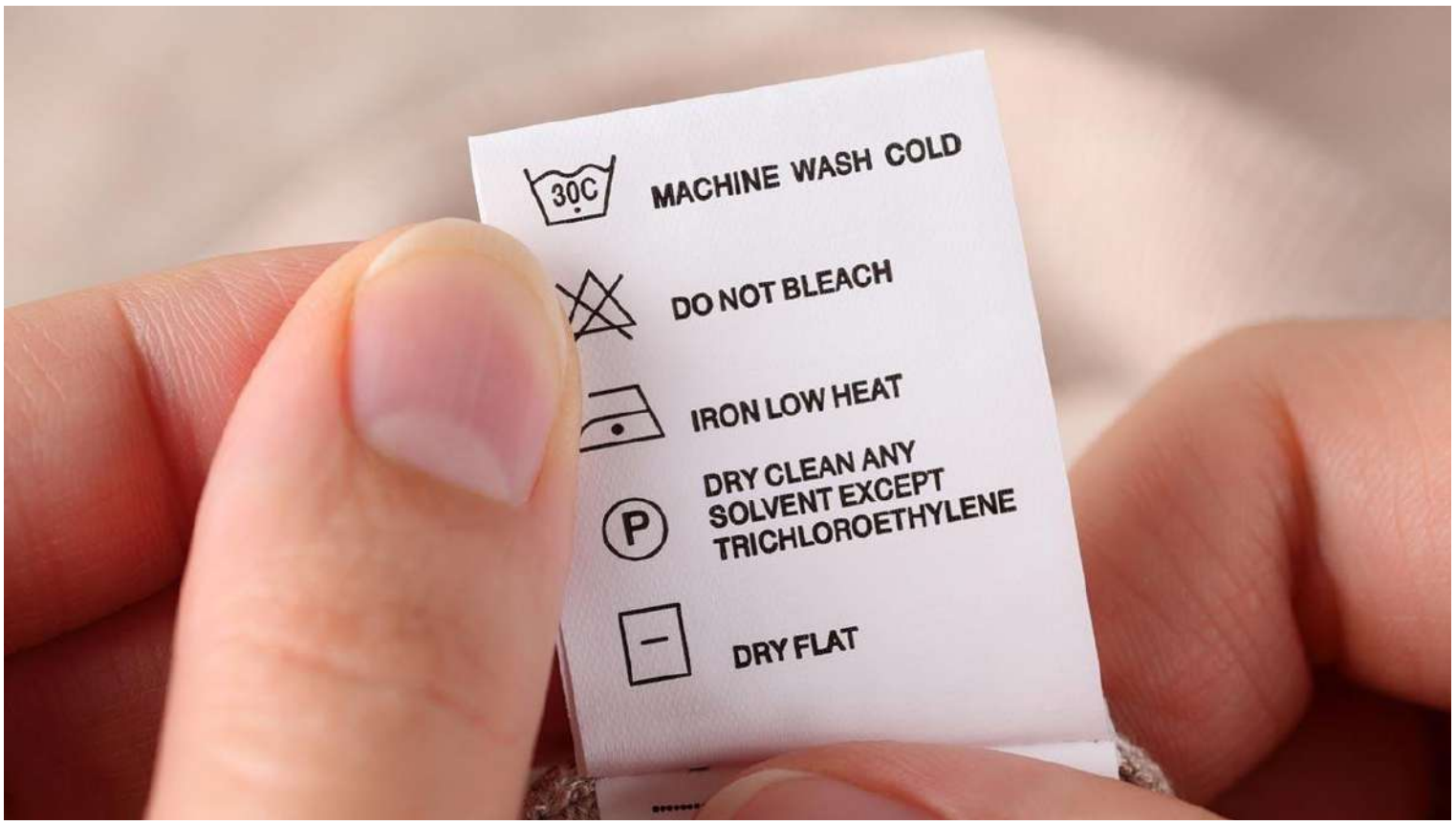
4.0 LAUNDRY CARE LABELS AND SYMBOLS

4.1 Meaning of a Laundry Care Label

A laundry care label is a small tag attached to a garment or textile article by the manufacturer. It contains instructions on how the article should be washed, dried, ironed and treated to maintain its quality.

Care labels are usually attached:

- Inside shirts and blouses.
- Along the side seams of dresses and trousers.
- Around the waistbands of trousers and skirts.
- Inside sweaters and jackets.
- On bedsheets, blankets and other household textile articles.




40°
HAND WASH WARM 40°
DO NOT BLEACH
WARM IRON
DO NOT DRY CLEAN
DO NOT TUMBLE DRY


40°

4.2 Importance of Laundry Care Labels

Care labels are important because they:

1. **Guide the washing process:** They indicate whether a garment should be hand washed, machine washed or dry cleaned.

2. **Prevent fabric damage:** They help users avoid washing methods that may weaken or destroy fibres.

3. **Prevent shrinking:** They indicate appropriate washing and drying conditions for fabrics that may shrink.

4. **Maintain colour:** They guide users on how to wash garments without causing unnecessary colour fading.

5. **Guide ironing:** They indicate the appropriate ironing temperature.

6. **Promote garment durability:** Following care instructions helps garments maintain their original quality for longer.

7. **Prevent accidents:** Special instructions may warn against using bleach or other chemicals that could damage the material.

8. **Save money:** Proper care reduces unnecessary replacement and repair costs.

9. **Promote proper household management:** They help individuals select appropriate laundering methods and equipment.

4.3 Main Categories of Laundry Symbols

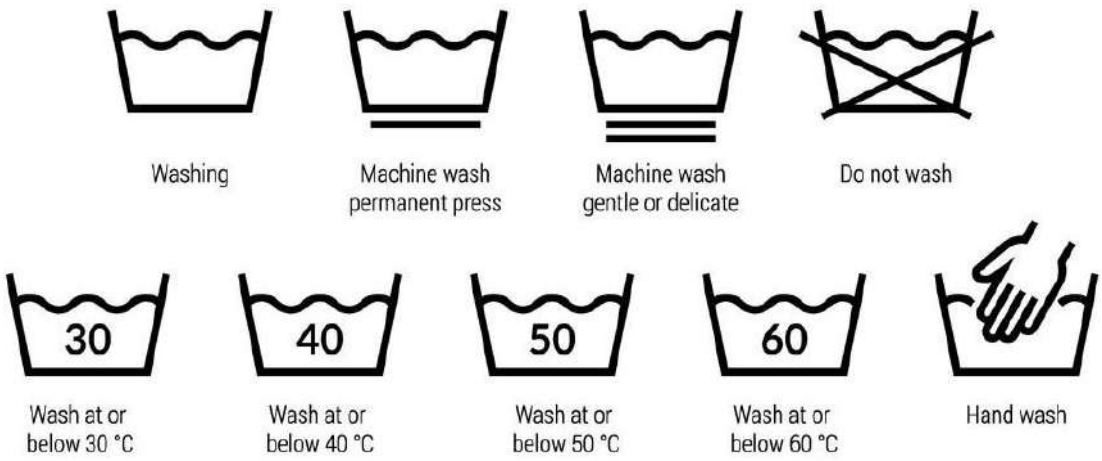
Laundry symbols are internationally recognised pictograms used to communicate garment care instructions. The symbols are generally grouped into five main categories:

1. Washing symbols.
2. Bleaching symbols.
3. Drying symbols.
4. Ironing symbols.
5. Professional care and special treatment symbols.

The symbols below are simplified illustrations of common care-label instructions. Actual labels may vary slightly depending on the care-label standard used.

A. Washing Symbols

The washing symbol is represented by a washtub containing water.



Symbol or appearance	Meaning
Washtub with no number	Normal washing, following the label instructions
Washtub 30°C	Wash at a maximum temperature of 30°C
Washtub 40°C	Wash at a maximum temperature of 40°C
Washtub 60°C	Wash at a maximum temperature of 60°C
Washtub with one line underneath	Use a mild or reduced-action washing programme
Washtub with two lines underneath	Use a very gentle washing programme
Hand inside washtub	Hand wash only
Crossed-out washtub	Do not wash

Explanation of washing symbols

- **Temperature numbers:** Indicate the maximum recommended washing temperature. They are not necessarily the temperature that must always be used.
- **One line underneath:** Indicates a reduced mechanical action and gentler spinning.
- **Two lines underneath:** Indicates a very gentle programme for delicate articles.
- **Hand wash symbol:** Indicates that the garment should be washed carefully by hand.
- **Crossed-out washtub:** Indicates that water washing should not be carried out.

B. Bleaching Symbols

Bleaching is the process of using a chemical substance to remove or reduce stains and unwanted colour from fabrics.

The bleaching symbol is represented by a triangle.



Symbol or appearance	Meaning
Empty triangle	Bleaching is permitted
Triangle with two diagonal lines	Only non-chlorine or oxygen-based bleach may be used
Crossed-out triangle	Do not bleach

Importance of bleaching symbols

1. Prevents damage caused by unsuitable bleaching agents.
2. Helps preserve the original colour of garments.
3. Prevents weakening of fabric fibres.

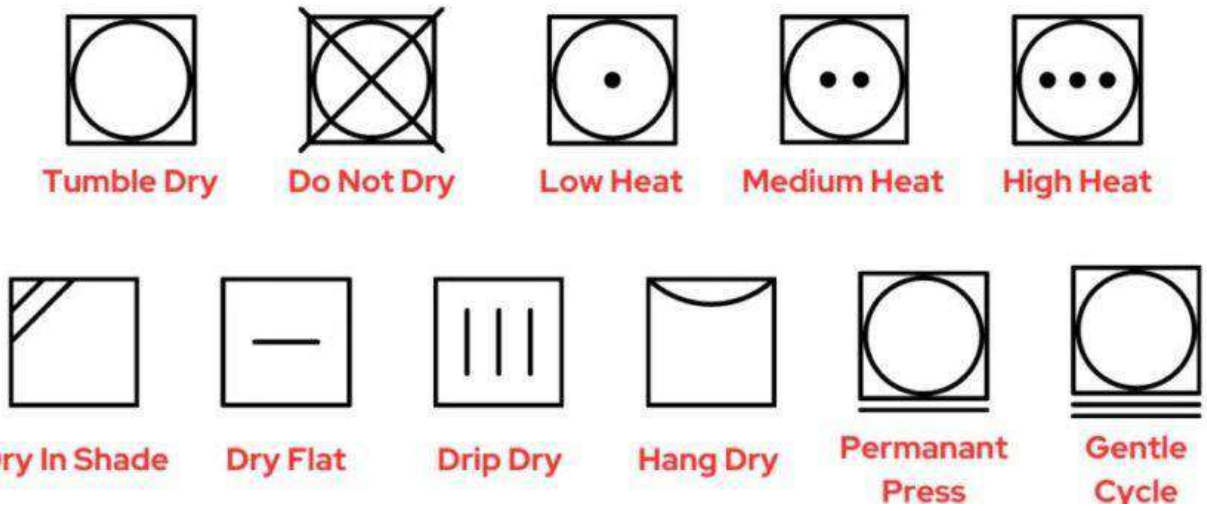
4. Guides users when removing stubborn stains.
5. Helps determine whether chlorine bleach is suitable.

Note: Bleach should never be used unless permitted by the care label. It should not be mixed with ammonia, acids or other cleaning chemicals because dangerous gases may be produced.

C. Drying Symbols

Drying is the process of removing moisture from washed fabrics.

Drying symbols are represented by a square.



Symbol or appearance	Meaning
Square with a circle	Tumble drying is permitted
Square with a circle and one dot	Tumble dry at low temperature
Square with a circle and two dots	Tumble dry at normal or medium temperature, as specified
Crossed-out square with circle	Do not tumble dry
Square with a horizontal line	Dry flat
Square with a vertical line	Line drying
Square with three vertical lines	Drip drying
Square with a diagonal line in the corner	Dry in the shade

Explanation

- **Tumble drying:** Clothes are dried in a rotating heated drum.
- **Line drying:** Garments are hung on a clothesline.
- **Flat drying:** Garments are laid horizontally on a suitable clean surface.
- **Drip drying:** Garments are allowed to dry by dripping without vigorous wringing.
- **Shade drying:** Garments are dried away from direct sunlight.

Importance of observing drying symbols

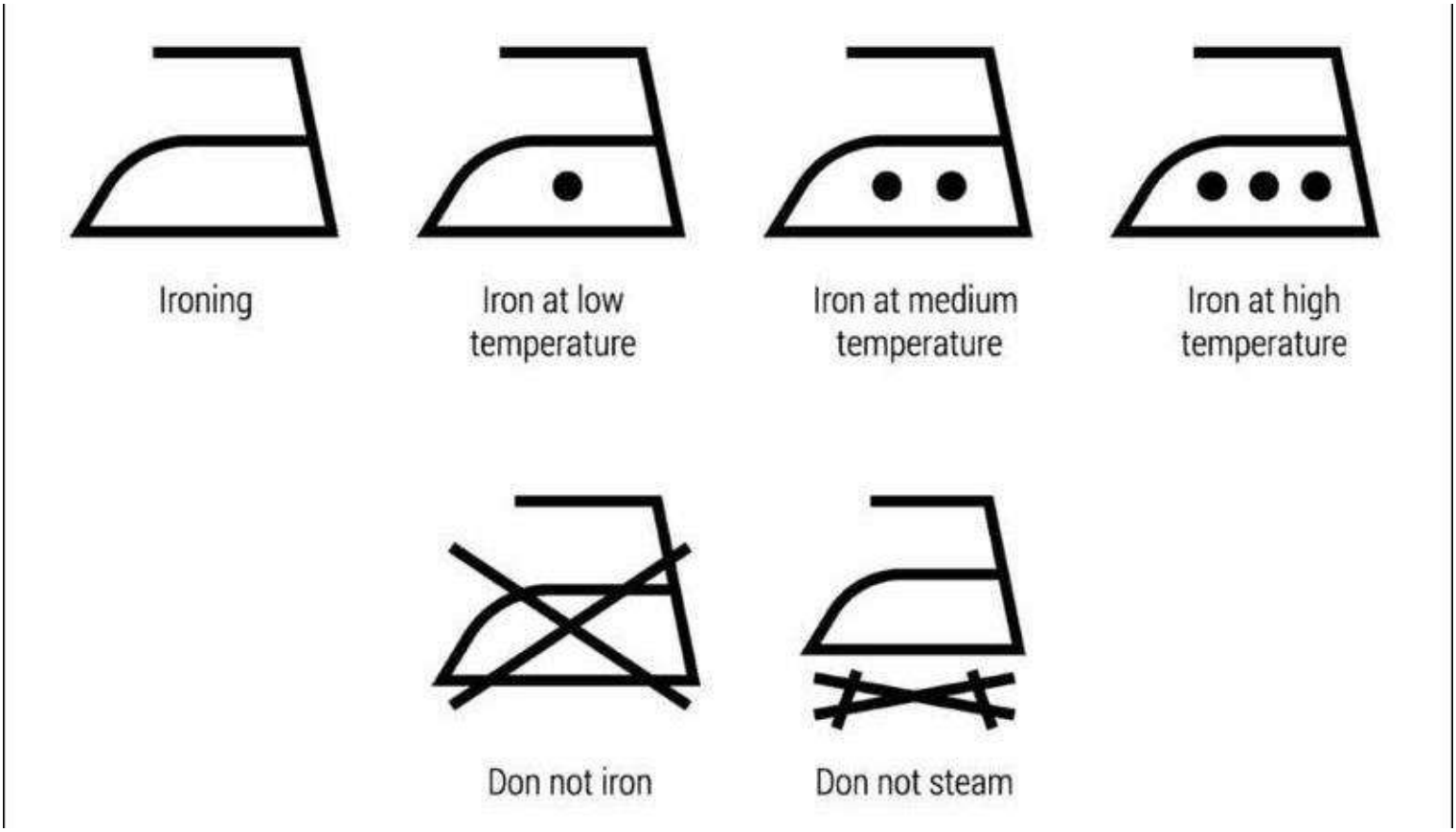
1. Prevents excessive shrinkage.
2. Prevents heat damage.
3. Maintains garment shape.
4. Prevents unnecessary fading.

5. Protects delicate fibres.
6. Helps garments retain their original appearance.

D. Ironing Symbols

Ironing is the process of using heat and pressure to remove wrinkles and creases from fabrics.

The ironing symbol is represented by an iron.



Symbol or appearance	Meaning
Iron with one dot	Iron at low temperature
Iron with two dots	Iron at medium temperature
Iron with three dots	Iron at high temperature
Crossed-out iron	Do not iron
Iron with crossed-out steam	Do not use steam

Explanation of ironing temperatures

- **One dot:** Low heat, generally suitable for delicate heat-sensitive fabrics such as nylon and acrylic.
- **Two dots:** Medium heat, suitable for some polyester and wool garments when permitted by the label.
- **Three dots:** High heat, suitable for durable fabrics such as cotton and linen when the label permits.

Importance of ironing symbols

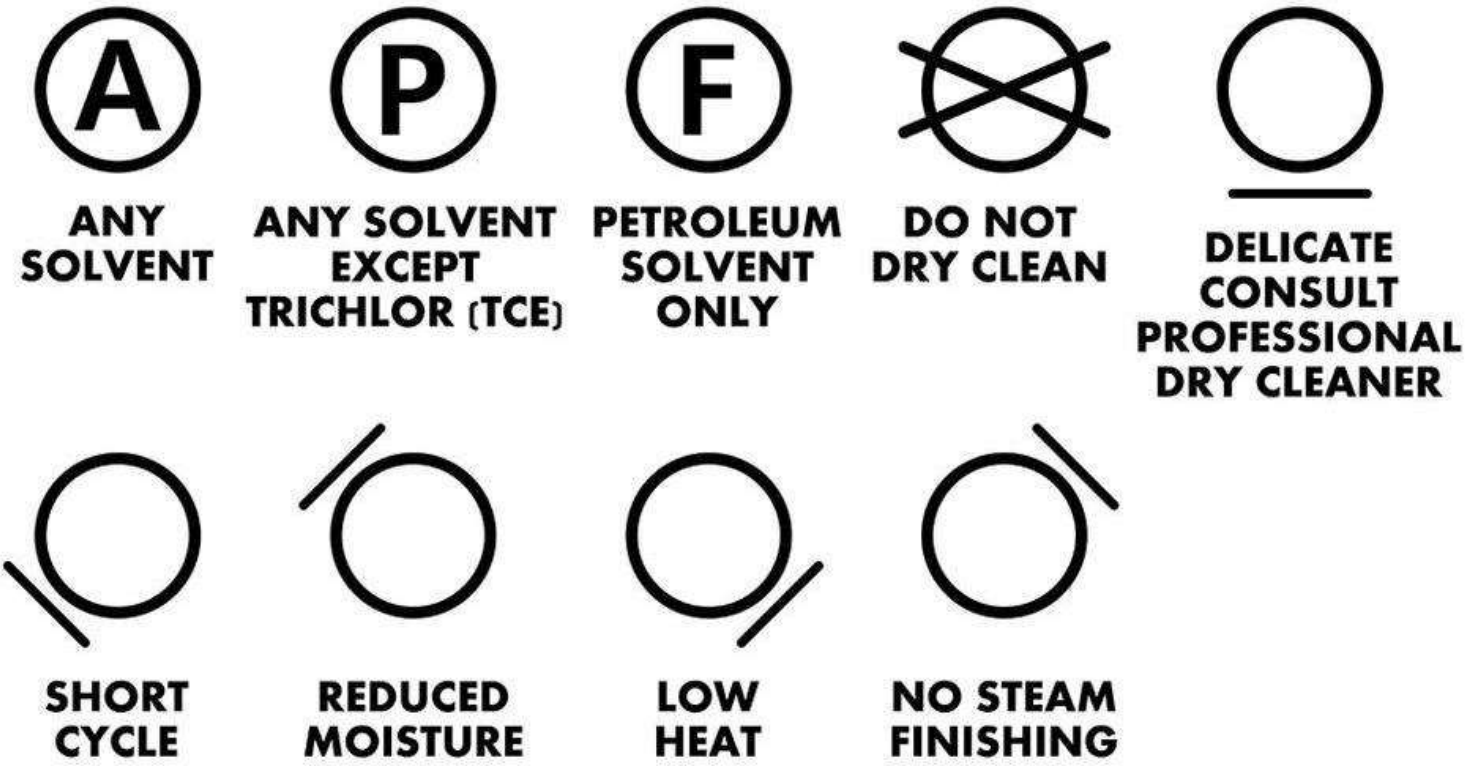
1. Prevent scorching.
2. Prevent melting of synthetic fibres.
3. Prevent shiny patches on fabrics.
4. Maintain the original texture of garments.

5. Protect delicate materials from heat damage.

E. Professional Care and Special Treatment Symbols

These symbols guide users on professional cleaning methods and special treatments.

They are represented mainly by circles.



Symbol or appearance	Meaning
Circle	Professional dry cleaning may be required
Circle with letter P	Professional dry cleaning using specified solvents
Circle with letter F	Professional dry cleaning using specified petroleum-based solvents
Circle with letter W	Professional wet cleaning
Crossed-out circle	Do not dry clean

Meaning of professional cleaning

Professional cleaning involves the use of specialised equipment, cleaning agents and techniques by trained laundry personnel.

Dry cleaning

Dry cleaning is a method of cleaning fabrics using specialised solvents rather than ordinary water-based washing.

It is suitable for certain garments that may be damaged by ordinary washing, depending on their construction and care instructions.

Wet cleaning

Professional wet cleaning is a specialised water-based cleaning process that uses controlled mechanical action, moisture, temperature and detergents to clean garments safely.

4.4 General Rules for Interpreting Laundry Symbols

1. Always read all symbols on the care label before washing a garment.
2. Follow the lowest temperature recommended for the garment.
3. Do not assume that all garments made from the same fibre have identical care instructions.
4. Observe lines underneath washing symbols because they indicate gentler washing action.
5. Never iron a garment marked do not iron.
6. Do not bleach garments marked do not bleach.
7. Follow instructions for drying and special treatment.
8. When a label gives several instructions, observe all of them.
9. If a care label is missing, identify the fabric as accurately as possible and use a cautious cleaning method.
10. When uncertain about an expensive or delicate garment, seek professional advice.

5.0 FACTORS TO CONSIDER WHEN SELECTING A LAUNDERING METHOD

Different fabrics require different laundering procedures. The following factors should be considered before washing any garment.

5.1 Type of Fibre

Different fibres have different physical and chemical properties.

Examples:

- Cotton can generally withstand regular washing.
- Wool may shrink or become felted when exposed to excessive heat and agitation.
- Silk requires gentle handling.
- Nylon is sensitive to excessive heat.
- Polyester is generally durable but may retain oily stains.

5.2 Fabric Construction

Fabric construction refers to the way fibres or yarns are joined together to form a fabric.

Examples:

- Woven fabrics.
- Knitted fabrics.
- Non-woven fabrics.

Some loosely knitted garments may stretch when wet and therefore require careful handling.

5.3 Colour of the Fabric

- White clothes may be washed separately from coloured garments.
- Brightly coloured clothes should be separated to prevent colour transfer.
- Dark clothes should be washed separately from light-coloured garments.

- New coloured garments may release excess dye during the first few washes.

5.4 Degree of Soiling

Heavily soiled garments may require soaking or pre-treatment.

Examples:

- School uniforms may contain mud and dust.
- Kitchen towels may contain grease and food stains.
- Sportswear may contain sweat and body oils.
- Farm overalls may contain soil and organic matter.

5.5 Type of Stain

Different stains require different treatments.

Examples:

Stain	Suitable treatment
Mud	Allow excess mud to dry, brush off and wash
Blood	Rinse promptly with cold water before washing
Grease	Apply a suitable grease-removing detergent
Tea and coffee	Treat promptly using a suitable stain remover
Ink	Use a fabric-compatible stain treatment after testing
Sweat	Use a suitable detergent and follow the care label

Important: Avoid hot water on protein stains such as blood because heat can set the stain.

5.6 Water Temperature

Water temperature affects the washing process.

- Cold water is suitable for many delicate garments and helps reduce colour bleeding.
- Warm water can improve the removal of some oily soils.
- Hot water may be appropriate for certain durable fabrics when permitted by the care label.

5.7 Type of Detergent

Detergents should be selected according to the fabric, colour and type of dirt.

Examples:

- Mild detergents for delicate fabrics.
- Colour-care detergents for coloured garments.
- Suitable heavy-duty detergents for heavily soiled durable garments.
- Specialised wool detergents for woollen articles.

5.8 Time Available and Equipment

Hand washing may be suitable when only a few garments require cleaning, while machine washing may be more practical for large quantities of suitable laundry.

5.9 Cost of Laundering

The cost of water, electricity, detergent and professional cleaning should be considered when selecting the laundering method.

5.10 Environmental Considerations

Use appropriate quantities of detergent, avoid unnecessary washing and conserve water and electricity.

6.0 LAUNDERING DIFFERENT TYPES OF FABRICS

6.1 Laundering Cotton Fabrics







Meaning of cotton

Cotton is a natural vegetable fibre obtained from the seed hairs of the cotton plant. It is widely used in clothing and household textile production.

Examples of cotton articles

1. School uniforms.
2. T-shirts.
3. Shirts and blouses.
4. Bedsheets.
5. Pillowcases.
6. Towels.
7. Handkerchiefs.
8. Kitchen towels.
9. Underwear.
10. Cotton dresses.

Characteristics of cotton fabrics

1. Absorbent: Cotton absorbs moisture and sweat.
2. Comfortable: It is comfortable to wear in warm weather.

3. Strong: It has good strength, particularly when wet.
4. Breathable: It allows air to pass through the fabric.
5. Washable: Many cotton articles can withstand regular washing.
6. Creases easily: Cotton fabrics wrinkle during washing and drying.
7. May shrink: Some cotton fabrics shrink when exposed to unsuitable washing or drying conditions.
8. Can withstand ironing: Many cotton articles can be ironed at relatively high temperatures when permitted by the label.

Procedure for laundering cotton fabrics

1. Sort cotton garments according to colour and degree of soiling.
2. Check the pockets and remove unwanted objects.
3. Read the care labels.
4. Separate white, dark and brightly coloured cotton articles.
5. Shake the garments to remove loose dust and dirt.
6. Prepare an appropriate detergent solution.
7. Pre-treat heavily stained areas where necessary.
8. Wash using hand washing or a suitable machine programme.
9. Use an appropriate water temperature as indicated on the care label.
10. Rub or agitate durable cotton fabrics where necessary.
11. Rinse thoroughly to remove detergent.
12. Remove excess water by gentle squeezing or spinning.
13. Shake and straighten the garments.
14. Hang on a clothesline or use an appropriate dryer.
15. Remove the garments when dry.
16. Iron using a suitable temperature.
17. Fold or hang neatly before storage.

Precautions when laundering cotton

- Avoid mixing coloured and white cotton articles.
- Avoid excessive use of bleach.
- Do not overload the washing machine.
- Follow care labels to prevent shrinkage.
- Remove stains promptly.
- Iron using the appropriate temperature.

6.2 Laundering Woollen Fabrics







Meaning of wool

Wool is a natural animal fibre obtained mainly from the fleece of sheep. It is used to make warm clothing and household textile articles.

Examples

1. Sweaters.
2. Cardigans.
3. Woollen scarves.
4. Blankets.
5. Socks.
6. Shawls.
7. Woollen coats.
8. Some carpets and rugs.

Characteristics of wool

1. Warm: Wool traps air and provides insulation against cold weather.
2. Elastic: It can stretch and recover its shape to some extent.
3. Absorbent: It absorbs moisture without immediately feeling wet.
4. Resilient: It can recover from creasing.

5. Shrinkable: It may shrink when exposed to excessive heat, moisture and agitation.
6. Sensitive to harsh treatment: Vigorous rubbing can cause felting.
7. Requires careful drying: Some woollen garments can stretch or lose their shape when hung while wet.

Meaning of felting

Felting is the matting and interlocking of wool fibres, causing the fabric to become thick, compact and smaller.

Causes of felting

- Excessive agitation.
- High temperatures.
- Sudden changes in temperature.
- Vigorous rubbing.
- Harsh washing procedures.

Procedure for laundering woollen fabrics

1. Read the care label carefully.
2. Sort woollen garments separately.
3. Check for stains and damaged areas.
4. Use cool or lukewarm water at the temperature recommended by the manufacturer.
5. Add a mild wool detergent.
6. Immerse the garment carefully.
7. Gently press and release the garment in the solution.
8. Avoid rubbing, twisting or stretching the fabric.
9. Drain the soapy water.
10. Rinse gently using water of a similar temperature.
11. Support the garment when lifting it because wet wool may stretch.
12. Press out excess water gently.
13. Roll the garment in a clean towel to absorb additional moisture where appropriate.
14. Reshape the garment to its original dimensions.
15. Dry flat on a clean, dry surface in a well-ventilated area.
16. Keep it away from excessive direct heat.
17. Store only when completely dry.

Precautions when laundering wool

- Avoid hot water.
- Avoid vigorous rubbing.
- Do not wring woollen garments.

- Avoid ordinary harsh detergents.
- Avoid hanging heavy wet woollen garments.
- Do not tumble dry unless specifically permitted.
- Protect wool from moth damage during storage.

6.3 Laundering Linen Fabrics







Meaning of linen

Linen is a natural vegetable fibre obtained from the stem of the flax plant.

Examples

1. Linen shirts.
2. Tablecloths.
3. Serviettes.
4. Bedsheets.
5. Dresses.
6. Trousers.
7. Curtains.
8. Kitchen textiles.

Characteristics of linen

1. Strong: Linen has good tensile strength.
2. Absorbent: It absorbs moisture effectively.
3. Breathable: It allows air circulation.
4. Comfortable: It is suitable for warm weather.
5. Creases easily: It wrinkles during use and washing.
6. Durable: It can last for a long time when properly maintained.
7. Dries relatively quickly under suitable conditions.
8. May shrink if incorrectly washed or dried.

Procedure for laundering linen fabrics

1. Sort the linen articles according to colour.
2. Read the care labels.
3. Remove loose dirt and dust.
4. Pre-treat visible stains using appropriate methods.
5. Prepare a suitable detergent solution.
6. Wash by hand or machine according to the care label.
7. Use an appropriate water temperature.
8. Wash carefully to avoid unnecessary abrasion.
9. Rinse thoroughly.
10. Remove excess water without unnecessary twisting.
11. Shake out the garments.

12. Hang or lay flat according to the care instructions.
13. Iron while slightly damp where appropriate.
14. Use a suitable ironing temperature.
15. Fold or hang neatly.

Precautions

- Avoid excessive bleaching.
- Avoid unsuitable high temperatures.
- Do not overload the washing machine.
- Avoid excessive rubbing.
- Iron according to the care label.

6.4 Laundering Polyester Fabrics







Meaning of polyester

Polyester is a synthetic fibre manufactured through chemical processes. It is widely used in clothing, household textiles and sportswear.

Examples

1. Sportswear.
2. School uniforms.
3. Dresses.
4. Trousers.
5. Curtains.
6. Bedcovers.
7. Jackets.
8. Shirts and blouses.

Characteristics of polyester

1. Strong and durable.
2. Resists creasing.
3. Dries relatively quickly.
4. Resists shrinking under normal recommended washing conditions.
5. Generally retains colour well.
6. May accumulate static electricity.
7. Can retain oily stains.
8. Sensitive to excessive heat.

Procedure for laundering polyester fabrics

1. Sort polyester garments according to colour.
2. Check the care label.
3. Close zips and fasten suitable fasteners.
4. Prepare a suitable detergent solution.
5. Wash by hand or using a suitable machine programme.
6. Use cool or warm water as recommended by the label.
7. Avoid excessive washing temperatures.
8. Rinse thoroughly.
9. Remove excess water by spinning or gentle squeezing.
10. Shake out the garment.
11. Hang on a clothesline or dry according to the care label.
12. Remove promptly when dry.

13. Iron at low or medium heat only if required and permitted.
14. Store neatly.

Precautions

- Avoid excessive heat.
- Do not use a hot iron.
- Avoid overloading the washing machine.
- Use a suitable detergent to remove oily stains.
- Avoid unsuitable bleaching agents.

6.5 Laundering Acrylic Fabrics







Meaning of acrylic

Acrylic is a synthetic fibre manufactured mainly from acrylonitrile-based polymers. It is commonly used as an alternative to wool in knitted garments.

Examples

1. Sweaters.
2. Cardigans.
3. Scarves.
4. Blankets.
5. Knitted hats.
6. Socks.
7. Shawls.

Characteristics of acrylic

1. Lightweight.
2. Soft to the touch.
3. Warm.
4. Dries relatively quickly.
5. Resistant to moth damage.
6. Can develop pilling.
7. May accumulate static electricity.

8. Sensitive to excessive heat.

Procedure for laundering acrylic fabrics

1. Read the care label.
2. Separate acrylic garments from rough fabrics.
3. Sort according to colour.
4. Prepare cool or lukewarm water.
5. Add a suitable mild detergent.
6. Immerse the garment.
7. Gently squeeze the garment in the washing solution.
8. Avoid vigorous rubbing.
9. Rinse using clean water.
10. Press out excess water gently.
11. Reshape the garment.
12. Dry flat or according to the care label.
13. Avoid excessive heat during drying.
14. Iron only if necessary and at the recommended low temperature.
15. Store neatly.

Precautions

- Avoid hot water.
- Avoid excessive agitation.
- Avoid direct high heat.
- Avoid rough handling.
- Prevent stretching when wet.

6.6 Laundering Viscose Fabrics







Meaning of viscose

Viscose is a regenerated cellulose fibre manufactured from processed plant cellulose, commonly obtained from wood pulp or other cellulose sources.

It is also commonly known as viscose rayon.

Examples

1. Dresses.
2. Blouses.
3. Shirts.
4. Skirts.
5. Scarves.

6. Linings.
7. Some household textile articles.

Characteristics of viscose

1. Soft and smooth.
2. Has a good drape.
3. Comfortable to wear.
4. Absorbs moisture.
5. Can wrinkle easily.
6. May lose strength when wet.
7. Can shrink or distort when incorrectly washed.
8. Some viscose fabrics require professional cleaning.

Procedure for laundering viscose fabrics

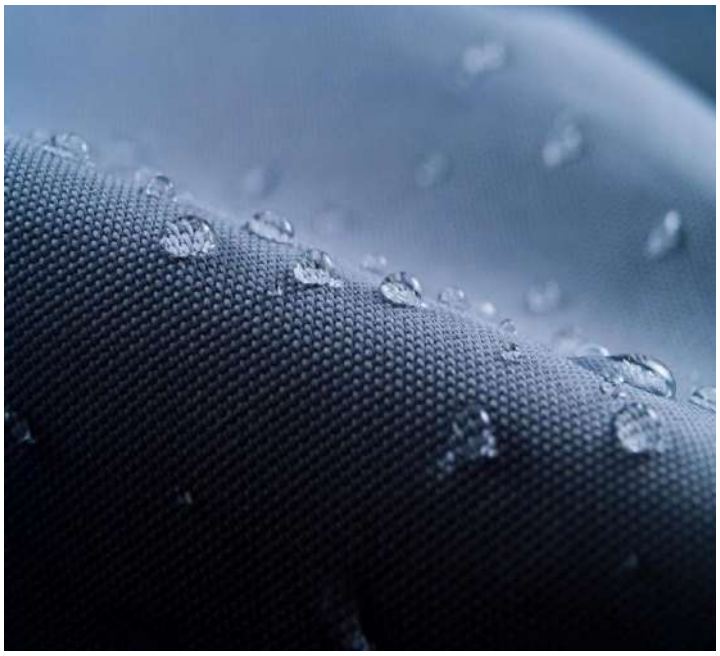
1. Check the care label before washing.
2. Separate viscose garments from rough materials.
3. Sort according to colour.
4. Use cool water if hand washing is permitted.
5. Add a mild detergent.
6. Immerse the garment carefully.
7. Gently squeeze the garment without vigorous rubbing.
8. Avoid prolonged soaking.
9. Rinse carefully.
10. Support the garment when lifting it.
11. Press out excess water gently.
12. Do not wring or twist the garment.
13. Reshape while damp.
14. Dry flat or hang only where the care label permits.
15. Iron at the recommended temperature, preferably while slightly damp if permitted.
16. Store carefully.

Precautions

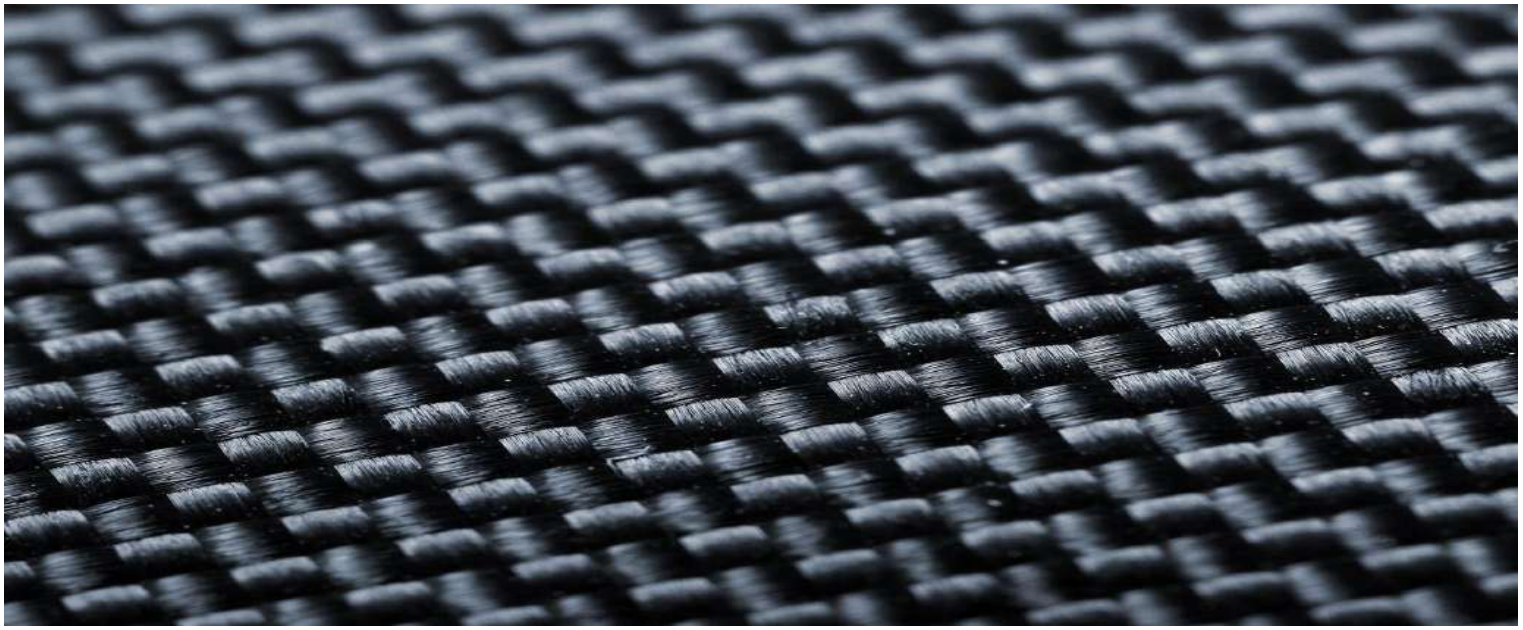
- Avoid vigorous rubbing.
- Avoid wringing.
- Avoid prolonged soaking.
- Avoid excessive heat.

- Follow professional cleaning instructions where indicated.

6.7 Laundering Nylon Fabrics







Meaning of nylon

Nylon is a synthetic polyamide fibre manufactured through chemical processes. It is commonly used to make strong, lightweight and durable textile products.

Examples

1. Stockings.
2. Sportswear.
3. Raincoats.
4. Windbreakers.

5. Bags.
6. Socks.
7. Some curtains.
8. Outdoor clothing.

Characteristics of nylon

1. Strong and durable.
2. Lightweight.
3. Smooth in texture.
4. Dries quickly.
5. Resists creasing.
6. Has low absorbency compared with cotton.
7. Sensitive to excessive heat.
8. Can accumulate static electricity.

Procedure for laundering nylon fabrics

1. Sort nylon garments according to colour.
2. Read the care label.
3. Close zips and remove detachable accessories where necessary.
4. Prepare cool or lukewarm water.
5. Add a suitable mild detergent.
6. Immerse the garment.
7. Gently wash by hand or machine using a suitable programme.
8. Avoid excessive friction.
9. Rinse thoroughly.
10. Remove excess water gently.
11. Hang or lay flat as directed by the care label.
12. Dry away from excessive heat.
13. Iron at low temperature only if permitted.
14. Store properly.

Precautions

- Avoid high washing temperatures.
- Avoid hot ironing.
- Avoid direct high heat during drying.
- Avoid harsh washing methods.

- Follow instructions for waterproof or coated nylon garments.

6.8 Laundering Silk Fabrics







Meaning of silk

Silk is a natural animal fibre obtained mainly from the cocoons of silkworms. It is valued for its smooth texture, lustre and luxurious appearance.

Examples

1. Silk dresses.
2. Scarves.

3. Blouses.
4. Neckties.
5. Shirts.
6. Decorative fabrics.
7. Some pillowcases.

Characteristics of silk

1. Smooth and soft.
2. Has a natural lustre.
3. Lightweight.
4. Comfortable to wear.
5. Absorbs moisture.
6. Can be weakened by prolonged exposure to sunlight.
7. May lose colour when washed incorrectly.
8. Sensitive to harsh chemicals.
9. Requires careful handling.

Procedure for laundering silk fabrics

1. Read the care label carefully.
2. Determine whether the garment can be hand washed or requires professional cleaning.
3. Sort silk garments separately.
4. Prepare cool water if hand washing is permitted.
5. Add a suitable mild detergent designed for delicate fabrics.
6. Immerse the garment gently.
7. Move it carefully through the washing solution.
8. Avoid rubbing, twisting or scrubbing.
9. Rinse gently using clean cool water.
10. Remove excess water by pressing gently between clean towels.
11. Do not wring the garment.
12. Reshape carefully.
13. Dry away from direct sunlight.
14. Iron at a low temperature if permitted, preferably on the reverse side.
15. Store in a clean, dry place.

Precautions

- Avoid harsh detergents.

- Avoid chlorine bleach.
- Avoid vigorous rubbing.
- Avoid prolonged soaking.
- Avoid direct sunlight during drying.
- Avoid high ironing temperatures.
- Seek professional cleaning where required.

6.9 Laundering Fabrics Containing Elastofibres






Meaning of elastofibres

Elastofibres are highly elastic manufactured fibres that can stretch considerably and return close to their original shape when the stretching force is removed.

They are commonly known by names such as elastane or spandex.

Examples

1. Leggings.
2. Stretch jeans.
3. Sportswear.

4. Swimming costumes.
5. Stretch underwear.
6. Yoga clothing.
7. Elastic waistbands.

Characteristics

1. Highly elastic.
2. Can recover their original shape.
3. Lightweight.
4. Often blended with other fibres.
5. Sensitive to excessive heat.
6. Can be damaged by unsuitable chemicals.
7. Provide flexibility and comfort.

Procedure for laundering elastofibre fabrics

1. Read the care label.
2. Sort garments according to colour.
3. Turn garments inside out where appropriate.
4. Close zips and fasteners.
5. Use cool water or the recommended temperature.
6. Add a mild detergent.
7. Wash using a gentle machine programme or hand wash as instructed.
8. Avoid vigorous rubbing.
9. Rinse thoroughly.
10. Remove excess water gently.
11. Avoid wringing.
12. Air-dry away from excessive heat.
13. Avoid tumble drying unless specifically permitted.
14. Avoid ironing unless the care label permits it.
15. Store neatly without overstretching.

Precautions

- Avoid excessive heat.
- Avoid chlorine bleach unless specifically permitted.
- Avoid harsh detergents.
- Avoid rough handling.

- Avoid prolonged exposure to direct sunlight.

7.0 COMPARISON OF LAUNDERING PROCEDURES FOR DIFFERENT FABRICS

Fabric	Washing method	Water temperature	Drying	Ironing
Cotton	Hand or machine	According to label; often warm or cool	Line drying	Medium to high, if permitted
Wool	Gentle hand or wool programme	Cool or lukewarm	Flat drying where required	Low, if permitted
Linen	Hand or machine	According to label	Line or flat drying	Medium to high, if permitted
Polyester	Hand or machine	Cool or warm	Line or low-heat tumble drying	Low to medium
Acrylic	Gentle hand or machine	Cool or lukewarm	Flat or line drying	Low, if permitted
Viscose	Gentle hand or professional cleaning	Cool, if permitted	According to label	Low to medium, if permitted
Nylon	Hand or machine	Cool or lukewarm	Line drying	Low, if permitted
Silk	Gentle hand or professional cleaning	Cool, if permitted	Shade drying	Low, if permitted
Elastofibres	Gentle hand or machine	Cool	Air drying	Usually avoid unless permitted

Important: The table provides general guidance. A manufacturer's care label takes priority because fabric blends, dyes, finishes and garment construction can change the appropriate procedure.

8.0 GENERAL PROCEDURE FOR LAUNDERING FABRICS

Laundering involves several stages. Each stage contributes to effective cleaning and proper maintenance of garments.







8.1 Sorting

Sorting is the process of separating clothes into different groups before washing.

Methods of sorting

1. According to colour:

- White clothes.
- Light-coloured clothes.
- Dark-coloured clothes.
- Brightly coloured clothes.

2. According to fabric:

- Cotton.
- Wool.
- Silk.
- Synthetics.
- Delicate fabrics.

3. According to degree of soiling:

- Lightly soiled clothes.
- Moderately soiled clothes.
- Heavily soiled clothes.

4. According to washing method:

- Hand-wash garments.
- Machine-wash garments.
- Dry-clean-only garments.

Importance of sorting

- Prevents colour transfer.
- Prevents damage to delicate garments.
- Improves washing effectiveness.
- Prevents contamination between heavily soiled and lightly soiled articles.
- Helps select the correct washing programme.

8.2 Preparation of Garments

Preparation involves getting clothes ready for washing.

Activities include:

1. Checking pockets.
2. Removing detachable accessories.

3. Closing zips.
4. Fastening appropriate buttons.
5. Turning some garments inside out.
6. Repairing loose buttons and minor tears where possible.
7. Shaking out loose dirt.
8. Identifying stains.
9. Reading care labels.
10. Pre-treating suitable stains.

8.3 Soaking

Soaking involves immersing clothes in water containing detergent or another suitable cleaning solution for a period to loosen dirt.

Importance of soaking

1. Softens dried dirt.
2. Helps loosen some stains.
3. Reduces the amount of rubbing required.
4. Makes washing easier.
5. Helps remove sweat and some body oils.

Precautions

- Avoid soaking delicate garments unless permitted.
- Avoid prolonged soaking of coloured garments.
- Do not soak wool and silk indiscriminately.
- Use appropriate water temperature.

8.4 Washing

Washing is the process of removing dirt using water, detergent and mechanical action.

Mechanical actions include:

- Kneading and squeezing.
- Friction.
- Rubbing.
- Machine agitation.

8.5 Rinsing

Rinsing is the process of removing detergent and loosened dirt from washed garments using clean water.

Procedure

1. Remove the soapy water.
2. Fill a clean basin with fresh water.

3. Immerse the garment.
4. Gently move or squeeze it to remove detergent.
5. Drain the water.
6. Repeat until the water is clear and detergent has been removed.
7. Remove excess water carefully.

Importance of rinsing

- Removes detergent residues.
- Prevents skin irritation caused by leftover detergent.
- Prevents stiffening of some fabrics.
- Improves the appearance and feel of garments.
- Prevents unwanted marks caused by detergent residues.

8.6 Blueing and Starching

Blueing

Blueing is the process of adding a small quantity of suitable laundry blue to the final rinse of white garments to counteract a yellowish appearance and improve their perceived whiteness.

Precautions when blueing

1. Use only a suitable laundry product.
2. Follow the manufacturer's instructions.
3. Dissolve the product properly.
4. Avoid excessive quantities.
5. Do not use on coloured garments unless specifically recommended.

Starching

Starching is the process of applying starch to certain garments to make them firmer and help them retain their shape.

Examples of articles that may be starched:

- Cotton shirts.
- Collars.
- Cuffs.
- Some tablecloths.
- Serviettes.

Types of starch

1. Natural starch: Obtained from sources such as maize, cassava or potatoes.
2. Commercial starch: Manufactured and sold in powder, liquid or spray form.

Importance of starching

1. Gives garments a crisp appearance.
2. Helps collars and cuffs retain their shape.
3. Improves the finish of certain household textiles.
4. Makes some fabrics appear neat and firm.

Precautions

- Avoid excessive starching.
- Do not starch delicate fabrics unless permitted.
- Prepare starch according to instructions.
- Clean the iron regularly to prevent starch build-up.

8.7 Drying

Drying involves removing moisture from washed fabrics.

Methods of drying

A. Line drying



Clothes are hung on a line using clothes pegs.

Advantages:

- Uses natural air.

- Requires little or no electricity.
- Suitable for many everyday garments.
- Allows several garments to dry simultaneously.

Disadvantages:

- Depends on weather conditions.
- Dust may settle on clothes.
- Strong sunlight may fade some fabrics.
- Wind may blow garments away if not secured.

B. Flat drying



Garments are spread horizontally on a clean surface.

Advantages:

- Prevents stretching of heavy wet garments.
- Helps maintain the shape of knitted garments.
- Suitable for some woollen and delicate articles.

C. Drip drying

Garments are hung or placed appropriately to allow water to drip away naturally.

It is useful for some garments that should not be wrung.

D. Tumble drying



This involves drying garments in a rotating heated drum.

Advantages:

- Saves time.
- Useful during rainy weather.
- Convenient for large households.

Disadvantages:

- Consumes electricity.
- Excessive heat may damage garments.
- Some fabrics may shrink.
- It may increase wear on certain garments.

E. Shade drying

Garments are dried in a well-ventilated shaded area away from direct sunlight.

It is useful for some coloured and delicate fabrics that may fade or become damaged by excessive sunlight.

8.8 Ironing and Finishing

Ironing involves using a heated iron to remove wrinkles and creases from garments.



Importance of ironing

1. Removes wrinkles and creases.
2. Improves the appearance of clothes.
3. Gives garments a neat and presentable finish.
4. Helps maintain the shape of certain garments.
5. Makes some household textiles look attractive.
6. Improves confidence when wearing clothes.

Factors to consider when ironing

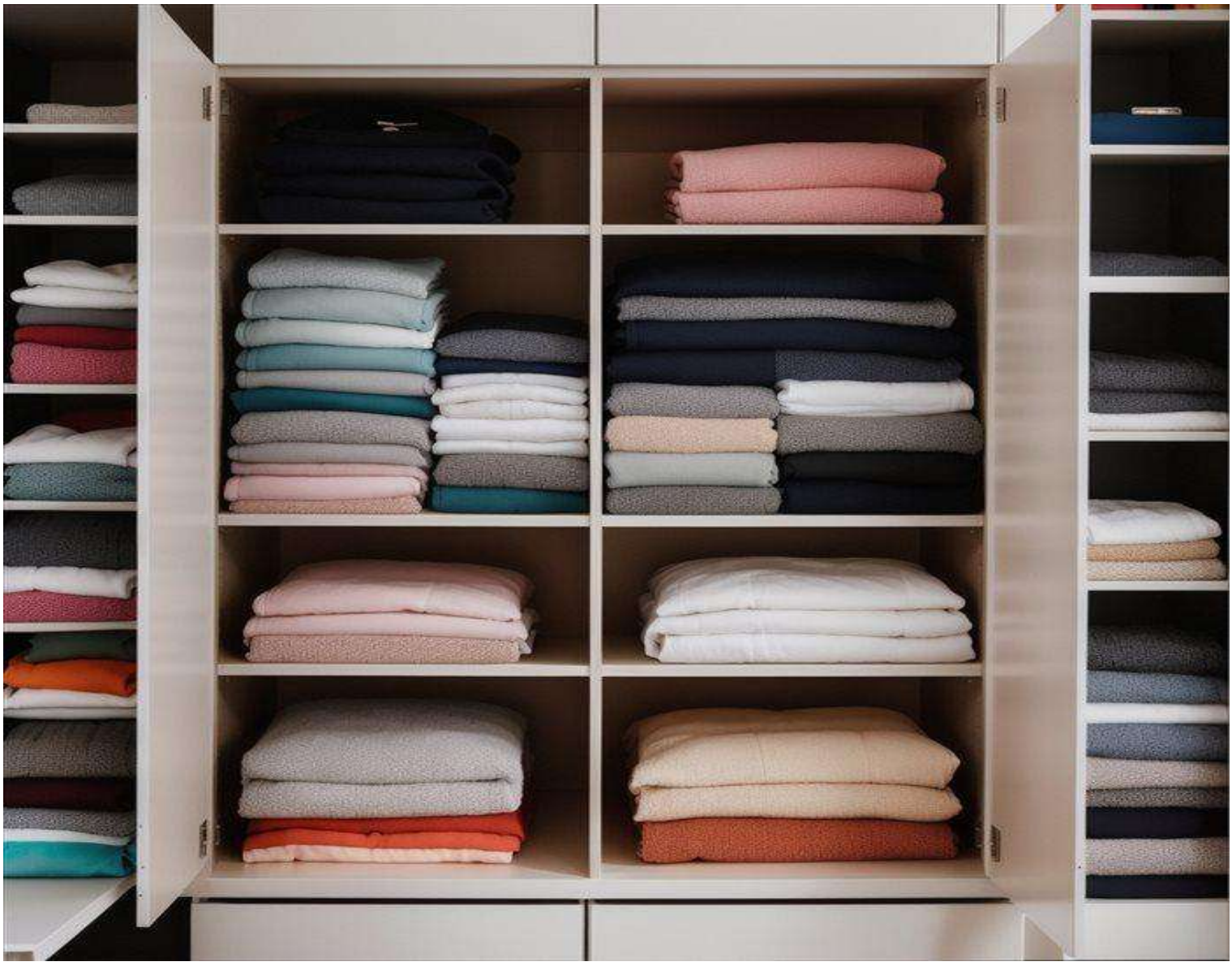
1. Type of fibre.
2. Fabric thickness.
3. Care-label instructions.
4. Heat sensitivity.
5. Moisture content.
6. Fabric colour and finish.
7. Type of iron available.

Procedure for ironing garments

1. Ensure that the garment is clean.
2. Check the care label.
3. Set up the ironing board.

4. Fill the iron with water if steam ironing is permitted.
5. Adjust the iron to the appropriate temperature.
6. Test the temperature on a hidden part where appropriate.
7. Spread the garment smoothly on the ironing board.
8. Iron collars and cuffs first where applicable.
9. Iron sleeves carefully.
10. Iron the body of the garment.
11. Iron delicate materials on the reverse side or using a pressing cloth where appropriate.
12. Avoid leaving the hot iron in one position.
13. Hang the garment immediately after ironing.
14. Switch off and unplug the iron after use.
15. Allow the iron to cool before storage.

8.9 Folding and Storage







Storage involves keeping clean and dry garments in suitable places until they are required.

Good practices when storing garments

1. Ensure garments are completely dry.
2. Fold garments neatly.
3. Hang garments that wrinkle easily.

4. Use suitable hangers.
5. Keep clothes in clean, dry cupboards.
6. Avoid overcrowding wardrobes.
7. Keep storage areas well ventilated.
8. Protect garments from insects and pests.
9. Store seasonal garments in clean, dry containers.
10. Keep footwear and dirty items separate from clean garments.

9.0 LAUNDRY EQUIPMENT, TOOLS AND MATERIALS

Effective laundering requires appropriate tools, equipment and materials.







9.1 Laundry Equipment

A. Washing basin

A container used to hold water and detergent during hand washing.

Uses:

- Soaking garments.
- Washing delicate articles.
- Rinsing clothes.

B. Bucket

A container used for carrying and storing water.

C. Washing machine

An electrical appliance used to wash garments mechanically.

D. Washing board

A ridged or textured surface used to rub strong garments during hand washing.

E. Clothesline

A rope or wire used for hanging clothes during drying.

F. Clothes pegs

Small devices used to secure garments to a clothesline.

G. Iron

An appliance used to remove wrinkles from garments through heat and pressure.

H. Ironing board

A padded, flat surface used when ironing clothes.

I. Laundry basket

A container used for collecting and transporting dirty or clean garments.

J. Drying rack

A frame used for hanging or spreading garments during drying.

9.2 Laundry Materials

A. Soap

Soap is a cleaning substance that helps loosen and remove dirt from fabrics.

B. Detergents

Detergents are cleaning substances formulated to remove dirt, grease and other unwanted substances from fabrics.

Types of detergents

1. Powder detergents.
2. Liquid detergents.

3. Mild detergents.
4. Heavy-duty detergents.
5. Specialised detergents for delicate fabrics.

C. Bleaching agents

These are substances used to remove stains or improve the whiteness of suitable fabrics.

D. Stain removers

Specialised products used to remove particular types of stains.

E. Fabric softeners

Products used during laundering to improve the softness and feel of suitable fabrics.

F. Laundry starch

A substance used to stiffen certain garments and improve their finish.

G. Laundry blue

A product used in small quantities on suitable white fabrics to counteract yellowish tones.

10.0 SAFETY AND HYGIENE DURING LAUNDERING

Safety and hygiene are essential when laundering clothes at home, school or commercial laundry establishments.

10.1 Safety Precautions

1. Read instructions on detergents and other laundry chemicals before use.
2. Keep cleaning chemicals away from children.
3. Avoid mixing different cleaning chemicals.
4. Wear protective gloves when handling irritating cleaning products.
5. Use electrical washing machines with dry hands.
6. Avoid touching electrical appliances with wet hands.
7. Keep electrical cables away from water.
8. Unplug irons after use.
9. Place hot irons on suitable heat-resistant stands.
10. Avoid leaving hot irons unattended.
11. Keep laundry areas free from unnecessary obstacles.
12. Use appropriate lifting techniques when carrying heavy laundry baskets.
13. Avoid overfilling basins and buckets.
14. Ensure adequate ventilation when using laundry products.
15. Follow instructions when operating washing machines and dryers.

10.2 Hygiene Practices

1. Wash hands after handling dirty laundry.

2. Separate heavily soiled garments from lightly soiled ones.
3. Handle contaminated laundry carefully.
4. Wash towels and bedding regularly.
5. Clean washing basins and laundry equipment after use.
6. Dry garments thoroughly before storage.
7. Keep laundry storage areas clean.
8. Avoid placing clean clothes on dirty surfaces.
9. Use clean water for rinsing.
10. Maintain proper disposal of wastewater.

10.3 Environmental Considerations in Laundering

1. Use water efficiently.
2. Avoid unnecessary washing.
3. Measure detergents correctly.
4. Use energy-efficient washing machines.
5. Wash full but not overloaded machine loads.
6. Prefer air drying where practical.
7. Use environmentally appropriate cleaning products.
8. Avoid releasing harmful chemicals into water sources.
9. Reuse suitable rinse water for appropriate cleaning activities where safe.
10. Repair leaking taps and water pipes.

11.0 COMMON LAUNDERING PROBLEMS, CAUSES AND SOLUTIONS

Problem	Possible cause	Prevention or solution
Shrinking	Excessive heat or unsuitable washing	Follow care labels and use appropriate temperatures
Colour fading	Strong detergents, unsuitable bleach or excessive sunlight	Use suitable detergents and appropriate drying
Stretching	Hanging heavy wet garments	Dry flat where recommended
Felting of wool	Heat and vigorous agitation	Wash gently using suitable wool care procedures
Scorching	Excessive ironing temperature	Use the recommended iron setting
Stiff garments	Inadequate rinsing or excessive starch	Rinse thoroughly and use starch sparingly
Detergent marks	Excessive detergent or poor rinsing	Measure detergent correctly and rinse properly
Pilling	Friction and fabric wear	Use gentle washing programmes
Unpleasant smell	Incomplete drying or poor storage	Dry thoroughly and store in ventilated areas
Colour bleeding	Mixing non-colourfast and light garments	Sort garments before washing
Loss of elasticity	Excessive heat or unsuitable chemicals	Use cool water and gentle drying

Fabric damage	Wrong washing method	Follow care labels

12.0 PRACTICAL LEARNING ACTIVITIES

The learner should develop practical skills in laundering different fabrics.

Activity 1: Identifying Laundry Symbols

Requirements

- Different garments with care labels.
- Exercise books.
- Pencils.
- Charts showing laundry symbols.

Procedure

1. Collect garments with different care labels.
2. Examine the labels.
3. Identify washing symbols.
4. Identify bleaching symbols.
5. Identify drying symbols.
6. Identify ironing symbols.
7. Identify professional care symbols.
8. Draw the symbols in an exercise book.
9. Write the meaning of each symbol.
10. Discuss the importance of observing the instructions.

Expected outcome: The learner interprets laundry care labels correctly.

Activity 2: Washing Cotton Fabric

Requirements

- Cotton garment.
- Washing basin.
- Water.
- Detergent.
- Clothesline.
- Clothes pegs.

Procedure

1. Examine the garment.
2. Read the care label.
3. Sort the garment.
4. Prepare detergent solution.

5. Wash using an appropriate method.
6. Rinse thoroughly.
7. Remove excess water.
8. Dry the garment.
9. Iron if necessary.
10. Evaluate the cleanliness and final appearance.

Expected outcome: The learner demonstrates correct laundering of cotton fabrics.

Activity 3: Laundering Woollen Fabric

Requirements

- Woollen sweater.
- Basin.
- Cool water.
- Mild wool detergent.
- Clean towels.

Procedure

1. Examine the woollen garment.
2. Read the care label.
3. Prepare a suitable washing solution.
4. Immerse the garment.
5. Gently squeeze it.
6. Rinse using suitable water.
7. Remove excess water without wringing.
8. Reshape the garment.
9. Dry flat if required.
10. Examine the final appearance.

Expected outcome: The learner demonstrates appropriate care of woollen garments.

Activity 4: Comparing Laundering Methods

The learner should:

1. Select suitable garments made from different fabrics.
2. Identify the fibres.
3. Read the care labels.
4. Select appropriate washing methods.
5. Carry out laundering.

6. Compare the results.
7. Identify challenges encountered.
8. Recommend suitable care practices.

Expected outcome: The learner explains why different fabrics require different laundering methods.

REVISION QUESTIONS

SECTION A: 30 MARKS

Instructions: Answer all questions. Each question carries 1 mark. Choose the correct answer from the alternatives A, B, C and D.

Multiple-Choice Questions

1. What is the correct meaning of laundering?

A. Decorating clothes using different materials.

B. Cleaning clothes and household textile articles through washing and other care processes.

C. Manufacturing clothes from fibres.

D. Designing clothes for different occasions.

2. Which of the following is the main purpose of laundering clothes?

A. Increasing the weight of garments.

B. Changing the original colour of fabrics.

C. Maintaining cleanliness and personal hygiene.

D. Making fabrics thicker.

3. Which method of laundering involves gently pressing and releasing a garment repeatedly in soapy water?

A. Rubbing.

B. Kneading and squeezing.

C. Machine washing.

D. Dry cleaning.

4. A learner is washing a delicate woollen sweater. Which method is most appropriate if the care label permits hand washing?

A. Vigorous rubbing.

B. Scrubbing on a washboard.

C. Kneading and squeezing.

D. Using a stiff brush.

5. Which washing method involves using a washing machine to clean garments?

A. Friction.

B. Rubbing.

C. Kneading.

D. Machine washing.

6. What is the main purpose of sorting clothes before washing?

A. To increase their weight.

B. To prevent colour transfer and fabric damage.

C. To make washing more expensive.

D. To increase the number of garments.

7. Which natural fibre is obtained from the fleece of sheep?

A. Cotton.

B. Linen.

C. Wool.

D. Silk.

8. A garment is made from fibres obtained from the stem of the flax plant. Which fabric is it?

A. Linen.

B. Nylon.

C. Polyester.

D. Acrylic.

9. Which of the following is a synthetic fibre?

A. Wool.

B. Silk.

C. Cotton.

D. Polyester.

10. Which fibre is obtained mainly from silkworm cocoons?

A. Nylon.

B. Silk.

C. Acrylic.

D. Linen.

11. What is the main function of a laundry care label?

A. To indicate the selling price of a garment.

B. To provide information about the manufacturer only.

C. To guide the user on the correct care of a garment.

D. To indicate the age of the garment.

12. A washing symbol showing a hand inside a washtub means that the garment should be:

A. Machine washed.

B. Hand washed.

C. Dry cleaned only.

D. Bleached.

13. What does a crossed-out triangle on a garment care label indicate?

A. Bleaching is compulsory.

B. Use hot water.

C. Do not bleach.

D. Use chlorine bleach.

14. What does an iron symbol with one dot indicate?

A. High-temperature ironing.

B. Medium-temperature ironing.

C. Low-temperature ironing.

D. Do not iron.

15. Which symbol is commonly used to represent drying instructions?

A. Circle.

B. Square.

C. Triangle.

D. Iron.

16. Which of the following is a suitable drying method for many woollen sweaters?

A. Hanging while excessively wet.

B. Drying flat.

C. Drying directly over a fire.

D. Using excessive tumble-drying heat.

17. Which of the following is a major characteristic of cotton?

A. It does not absorb moisture.

B. It is always waterproof.

C. It is absorbent and comfortable.

D. It melts easily when washed.

18. Which substance is used to make certain garments firm and crisp?

A. Laundry blue.

B. Starch.

C. Fabric dye.

D. Cooking oil.

19. What is the main purpose of rinsing clothes after washing?

A. To add more dirt.

B. To remove detergent and loosened dirt.

C. To increase the colour of clothes.

D. To make garments heavier.

20. Which of the following is the most appropriate treatment for a fresh blood stain on a washable garment?

A. Rinse with cold water.

B. Apply boiling water immediately.

C. Iron the stain.

D. Rub with cooking oil.

21. Which fibre may become felted when exposed to excessive heat and vigorous agitation?

A. Polyester.

B. Nylon.

C. Wool.

D. Cotton.

22. Why should viscose garments be handled carefully when wet?

A. They become waterproof.

B. They may lose strength and become distorted.

C. They become resistant to all chemicals.

D. They become completely elastic.

23. Which of the following is a characteristic of polyester?

A. It always shrinks during washing.

B. It wrinkles more easily than all natural fibres.

C. It generally resists creasing and dries relatively quickly.

D. It cannot be washed.

24. Which fibre is commonly used in sportswear because of its elasticity?

A. Elastane.

B. Linen.

C. Cotton.

D. Wool.

25. What is the purpose of laundry blue?

A. To make clothes smell sweet.

B. To counteract yellowish tones in suitable white fabrics.

C. To remove grease from all fabrics.

D. To make woollen garments shrink.

26. Which equipment is used to secure garments to a clothesline?

A. Ironing board.

B. Clothes pegs.

C. Washing basin.

D. Laundry brush.

27. Which of the following is an advantage of machine washing?

A. It always damages fabrics.

B. It requires vigorous manual labour.

C. It saves time and physical effort.

D. It cannot wash multiple garments.

28. A learner uses an excessively hot iron on a nylon garment. What is the most likely consequence?

A. The garment becomes stronger.

B. The fabric may melt or become damaged.

C. The garment becomes waterproof.

D. The fabric becomes thicker.

29. Which practice promotes environmental conservation during laundering?

A. Using excessive detergent.

B. Leaving water taps running.

C. Using appropriate quantities of water and detergent.

D. Washing one garment in a full machine load.

30. Why should clean garments be completely dry before storage?

A. To increase their weight.

B. To encourage the growth of mould.

C. To prevent unpleasant smells and mould growth.

D. To make them more difficult to iron.

SECTION B: STRUCTURED QUESTIONS

50 MARKS

Instructions: Answer all questions. Write your answers clearly and provide relevant examples where necessary.

QUESTION 1: LAUNDERING METHODS (8 MARKS)

a) Define the term laundering. (2 marks)

b) Explain three methods of hand laundering fabrics. (3 marks)

c) State three advantages of machine washing. (3 marks)

QUESTION 2: LAUNDRY CARE LABELS (8 MARKS)

a) What is a laundry care label? (2 marks)

b) State four main categories of laundry care symbols found on garments. (4 marks)

c) Explain two reasons why it is important to follow laundry care-label instructions. (2 marks)

QUESTION 3: CHARACTERISTICS OF FIBRES (8 MARKS)

a) Differentiate between natural fibres and synthetic fibres. (2 marks)

b) Give two examples of natural animal fibres. (2 marks)

c) State four characteristics of cotton fabrics. (4 marks)

QUESTION 4: LAUNDERING PROCEDURES (8 MARKS)

a) Outline four stages involved in the laundering of clothes. (4 marks)

b) Explain four precautions to observe when laundering woollen garments. (4 marks)

QUESTION 5: LAUNDERING DIFFERENT FABRICS (9 MARKS)

A family has different garments made from cotton, silk and polyester.

a) Explain three characteristics of silk fabrics. (3 marks)

b) Describe three procedures to follow when laundering cotton garments. (3 marks)

c) State three precautions to observe when laundering polyester garments. (3 marks)

QUESTION 6: DRYING, FINISHING AND SAFETY (9 MARKS)

a) Explain three methods of drying washed garments. (3 marks)

b) State three importance of ironing clothes. (3 marks)

c) Explain three safety precautions to observe when laundering fabrics at home. (3 marks)

TOTAL: 50 MARKS

15.0 ANSWER KEY AND MARKING SCHEME

Section A: Multiple-Choice Answers

Question	Answer	Question	Answer
1	B	16	B
2	C	17	C
3	B	18	B
4	C	19	B
5	D	20	A
6	B	21	C
7	C	22	B
8	A	23	C
9	D	24	A
10	B	25	B
11	C	26	B
12	B	27	C
13	C	28	B
14	C	29	C
15	B	30	C

Section B: Suggested Marking Scheme

QUESTION 1: LAUNDERING METHODS (8 MARKS)

a) Definition (2 marks)

Laundering is the process of cleaning clothes and household textile articles by removing dirt, stains, sweat and other unwanted substances through washing, rinsing, drying and finishing.

b) Three methods of hand laundering (3 marks)

Award 1 mark each.

1. Kneading and squeezing – gently pressing and releasing the fabric repeatedly in soapy water to remove dirt.
2. Friction – rubbing two fabric surfaces against each other to loosen and remove dirt.
3. Rubbing – rubbing a garment against itself or a suitable washing surface to remove dirt.

c) Advantages of machine washing (3 marks)

Award 1 mark each.

- Saves time.
- Reduces physical effort.
- Can wash several garments simultaneously.
- Provides consistent washing action.
- Offers specialised washing programmes.
- Suitable for handling large quantities of laundry.

QUESTION 2: LAUNDRY CARE LABELS (8 MARKS)

a) Meaning (2 marks)

A laundry care label is a tag attached to a garment containing instructions on how to wash, bleach, dry, iron and treat the garment.

b) Categories (4 marks)

Award 1 mark each.

1. Washing symbols.
2. Bleaching symbols.
3. Drying symbols.
4. Ironing symbols.
5. Professional care and special treatment symbols.

c) Importance (2 marks)

Award 1 mark each.

- Prevents damage to fabric fibres.
- Prevents shrinking.

- Maintains garment colour.
- Guides appropriate ironing temperatures.
- Prevents damage caused by unsuitable chemicals.
- Increases garment durability.

QUESTION 3: CHARACTERISTICS OF FIBRES (8 MARKS)

a) Difference (2 marks)

- Natural fibres are obtained from plants or animals. (1 mark)
- Synthetic fibres are manufactured through chemical processes. (1 mark)

b) Examples (2 marks)

- Wool. (1 mark)
- Silk. (1 mark)

c) Characteristics of cotton (4 marks)

Award 1 mark each.

- Absorbs moisture.
- Comfortable to wear.
- Strong and durable.
- Breathable.
- Creases easily.
- Can shrink under unsuitable washing conditions.
- Withstands relatively high ironing temperatures when permitted.

QUESTION 4: LAUNDERING PROCEDURES (8 MARKS)

a) Four stages (4 marks)

Award 1 mark each.

- Sorting.
- Preparation.
- Soaking.
- Washing.
- Rinsing.
- Drying.
- Ironing and finishing.
- Folding and storage.

b) Precautions when laundering wool (4 marks)

Award 1 mark each.

- Use cool or lukewarm water as recommended.
- Use mild wool detergent.
- Avoid vigorous rubbing.
- Avoid twisting or wringing.
- Avoid excessive agitation.
- Reshape the garment while damp.
- Dry flat where indicated.
- Avoid excessive heat.

QUESTION 5: LAUNDERING DIFFERENT FABRICS (9 MARKS)

a) Characteristics of silk (3 marks)

Award 1 mark each.

- Soft and smooth.
- Has natural lustre.
- Lightweight.
- Absorbs moisture.
- Requires gentle handling.
- Can be damaged by harsh chemicals.
- Sensitive to prolonged sunlight.

b) Cotton laundering procedures (3 marks)

Award 1 mark each for any three well-explained points.

- Sort according to colour.
- Read the care label.
- Prepare a suitable detergent solution.
- Pre-treat stains.
- Wash using an appropriate method.
- Rinse thoroughly.
- Dry appropriately.
- Iron at a suitable temperature.

c) Precautions when laundering polyester (3 marks)

Award 1 mark each.

- Avoid excessive washing temperatures.
- Use suitable detergent.
- Avoid excessive ironing heat.

- Avoid overloading the washing machine.
- Follow care-label instructions.
- Avoid unsuitable bleaching agents.

QUESTION 6: DRYING, FINISHING AND SAFETY (9 MARKS)

a) Methods of drying (3 marks)

Award 1 mark each.

1. Line drying – hanging clothes on a clothesline to dry through natural air circulation.
2. Flat drying – spreading garments horizontally on a clean surface.
3. Tumble drying – drying garments in a rotating heated drum.
4. Shade drying – drying clothes away from direct sunlight.
5. Drip drying – allowing water to drip naturally from garments.

b) Importance of ironing (3 marks)

Award 1 mark each.

- Removes wrinkles and creases.
- Improves personal appearance.
- Gives garments a neat finish.
- Helps maintain the shape of some garments.
- Makes household textiles attractive.

c) Safety precautions (3 marks)

Award 1 mark each.

- Keep electrical appliances away from water.
- Unplug the iron after use.
- Keep detergents away from children.
- Wear protective gloves when handling irritating chemicals.
- Avoid mixing cleaning chemicals.
- Use dry hands when operating electrical equipment.
- Keep the laundry area clean and free from obstacles.

STRAND 7.0: HOME MANAGEMENT

SUB-STRAND 2.5: INTERIOR DECORATION

1.0 INTRODUCTION TO INTERIOR DECORATION

Meaning of interior decoration

Interior decoration refers to the art and practice of improving the appearance, comfort, beauty and functionality of the inside spaces of a building through the appropriate selection and arrangement of colours, furniture, furnishings, accessories, lighting, flowers and other decorative items.

It involves organising the interior of a house, classroom, office, hotel or other building to make it attractive, comfortable, safe and suitable for its intended purpose.

Interior decoration considers both the appearance and practical use of a room.

Examples of interior decoration in Kenyan homes

1. Arranging sofas, seats and coffee tables in a sitting room.
2. Selecting curtains that complement the wall colour.
3. Placing flower vases on dining tables.
4. Using carpets and rugs to improve the appearance of floors.
5. Hanging framed photographs and artwork on walls.
6. Using attractive beddings in bedrooms.
7. Arranging kitchen utensils neatly on shelves.
8. Using indoor plants to improve the appearance of living spaces.
9. Selecting suitable lighting for different rooms.
10. Using cushions and tablecloths to introduce colour and texture.

1.1 Importance of Interior Decoration

Interior decoration is important in homes and other buildings for the following reasons:

1. **Improves the appearance of rooms:** It makes rooms attractive, neat and pleasant to occupy.
2. **Promotes comfort:** Proper furniture arrangement and suitable furnishings make occupants comfortable.
3. **Improves functionality:** It ensures that available spaces are used effectively for their intended purposes.
4. **Creates a welcoming environment:** A well-decorated home provides a pleasant atmosphere for family members and visitors.
5. **Promotes cleanliness and organisation:** Proper storage and arrangement of household items reduce unnecessary clutter.
6. **Expresses personal taste:** Interior decoration allows individuals to express their preferences, interests and creativity.
7. **Improves mood:** Appropriate colours, lighting and accessories can create relaxing, cheerful or stimulating environments.
8. **Enhances safety:** Proper furniture arrangement provides clear pathways and reduces accidents.

9. **Makes small rooms appear spacious:** Appropriate colours, mirrors and furniture arrangements can create an illusion of space.
10. **Promotes cultural identity:** Locally made baskets, pottery, carvings, fabrics and traditional artwork can reflect Kenyan cultural heritage.
11. **Increases property appeal:** An attractive interior can make a house more appealing to potential buyers or tenants.
12. **Encourages responsible resource utilisation:** Improvised and locally available materials can be used creatively instead of purchasing expensive decorative products.

2.0 ELEMENTS OF INTERIOR DESIGN

2.1 Meaning of Elements of Interior Design

Elements of interior design are the basic visual and physical features used to create an attractive, comfortable, balanced and functional interior space.

They are the building blocks that designers use when decorating rooms.

The main elements of interior design are:

1. Space
2. Line
3. Form
4. Colour
5. Texture
6. Light
7. Pattern

2.2 Space

Meaning of space

Space refers to the area available within a room or building for movement, furniture, household activities and decoration.

It is the foundation of interior design because all decorative items and furniture must fit within the available space.

Types of space

a) Positive space

Positive space refers to the area occupied by furniture, furnishings, accessories and other objects in a room.

Examples:

- Space occupied by a sofa.
- Area covered by a dining table.
- Space occupied by a wardrobe.
- Area occupied by a flower stand.

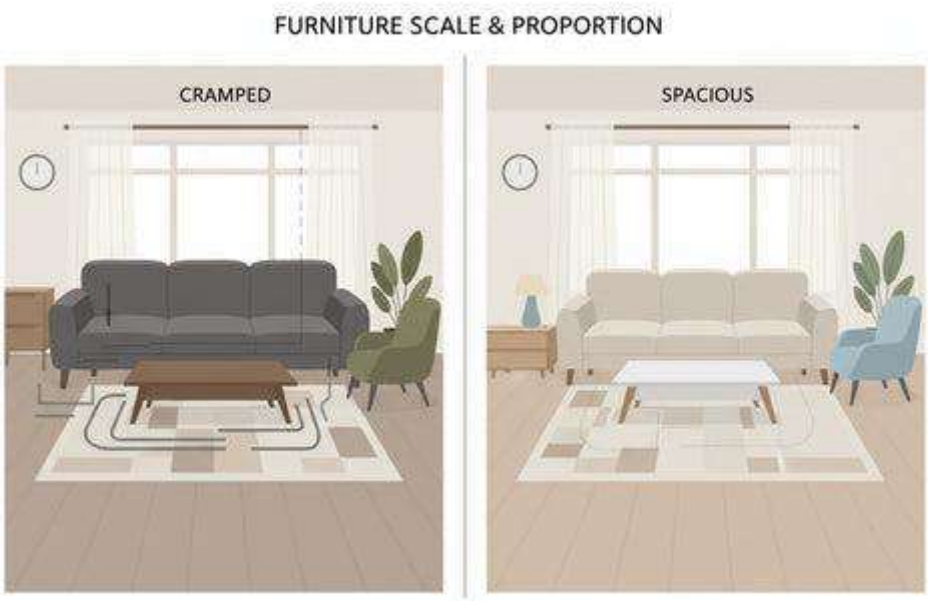
b) Negative space

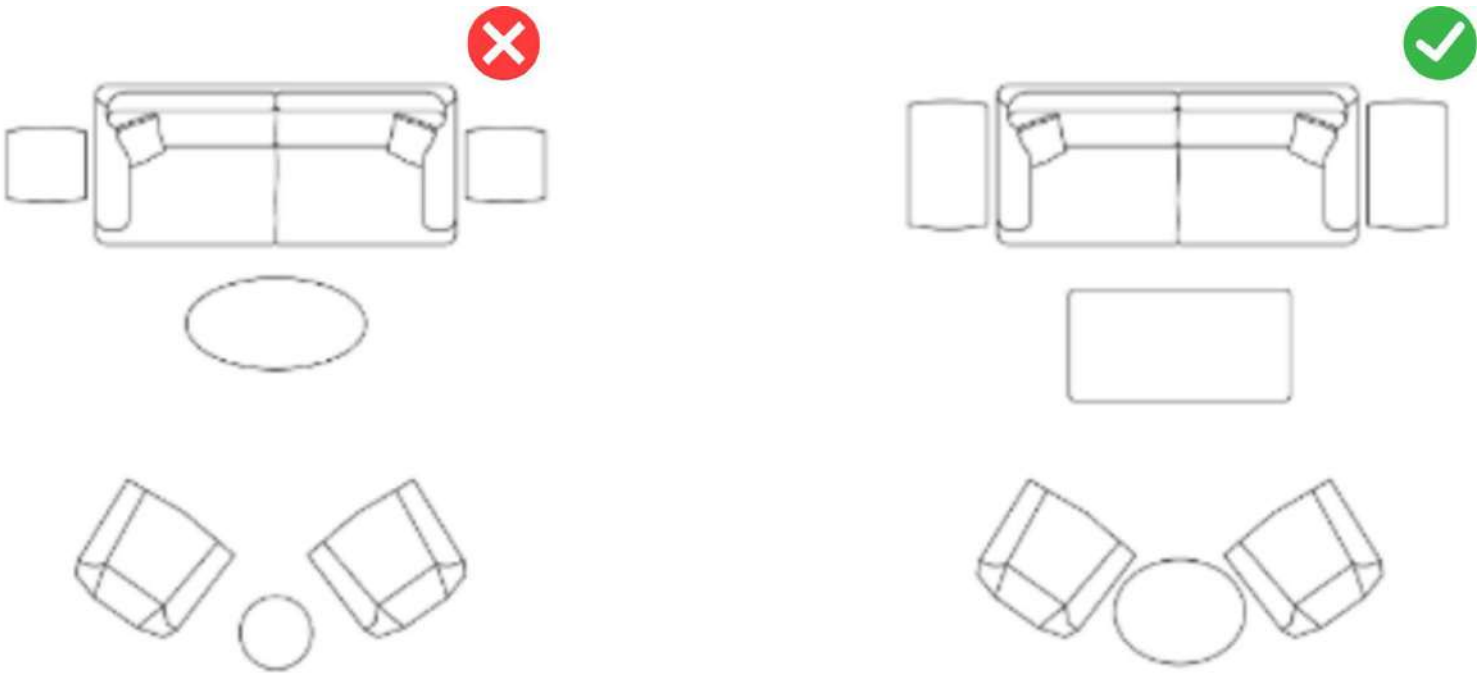
Negative space refers to the empty or unoccupied areas surrounding furniture and other objects.

Examples:

- Open floor space between a sofa and a television stand.
- Walking space between a dining table and the wall.
- Empty space around a bed.

Negative space is important because it allows free movement and prevents overcrowding.







Importance of space in interior decoration

1. Promotes free movement within rooms.
2. Prevents overcrowding of furniture.
3. Makes rooms appear organised and spacious.
4. Provides sufficient room for household activities.
5. Improves accessibility for children, older people and persons with disabilities.
6. Creates visual balance.
7. Allows proper placement of decorative accessories.

8. Makes cleaning and maintenance easier.

Factors to consider when organising space

1. Size and shape of the room.
2. Number of people using the room.
3. Intended purpose of the room.
4. Size and quantity of furniture.
5. Position of doors and windows.
6. Availability of natural lighting.
7. Movement pathways.
8. Safety requirements.
9. Storage requirements.

Practical example

In a small sitting room in a Kenyan home, a household may use a two-seater sofa, a compact television stand and a small coffee table instead of large furniture that occupies most of the floor area.

2.3 Line

Meaning of line

A line is a visual element created by the arrangement of objects, edges, shapes or architectural features within an interior space.

Lines guide the eyes and influence how people perceive the size, height, width and general appearance of a room.

Types of lines used in interior decoration

a) Horizontal lines

These are lines that run from side to side.

Examples:

- Long shelves.
- Horizontal window frames.
- Table edges.
- Long sofas.

Effects of horizontal lines:

1. Create a feeling of stability and calmness.
2. Make a room appear wider.
3. Create a relaxed atmosphere.
4. Give a room a balanced appearance.

b) Vertical lines

These are lines that run from top to bottom.

Examples:

- Door frames.
- Tall curtains.
- Vertical wall decorations.
- Tall wardrobes.
- Floor-to-ceiling shelves.

Effects of vertical lines:

1. Make ceilings appear higher.
2. Create a feeling of height.
3. Give a room a formal appearance.
4. Create an impression of strength and dignity.

c) Diagonal lines

These are slanting lines that run in different directions.

Examples:

- Slanting decorative patterns.
- Diagonal floor tile arrangements.
- Sloping staircase rails.

Effects of diagonal lines:

1. Create movement and excitement.
2. Introduce visual interest.
3. Make a room appear dynamic.
4. Direct the eyes towards particular features.

d) Curved lines

These are lines that bend or form rounded shapes.

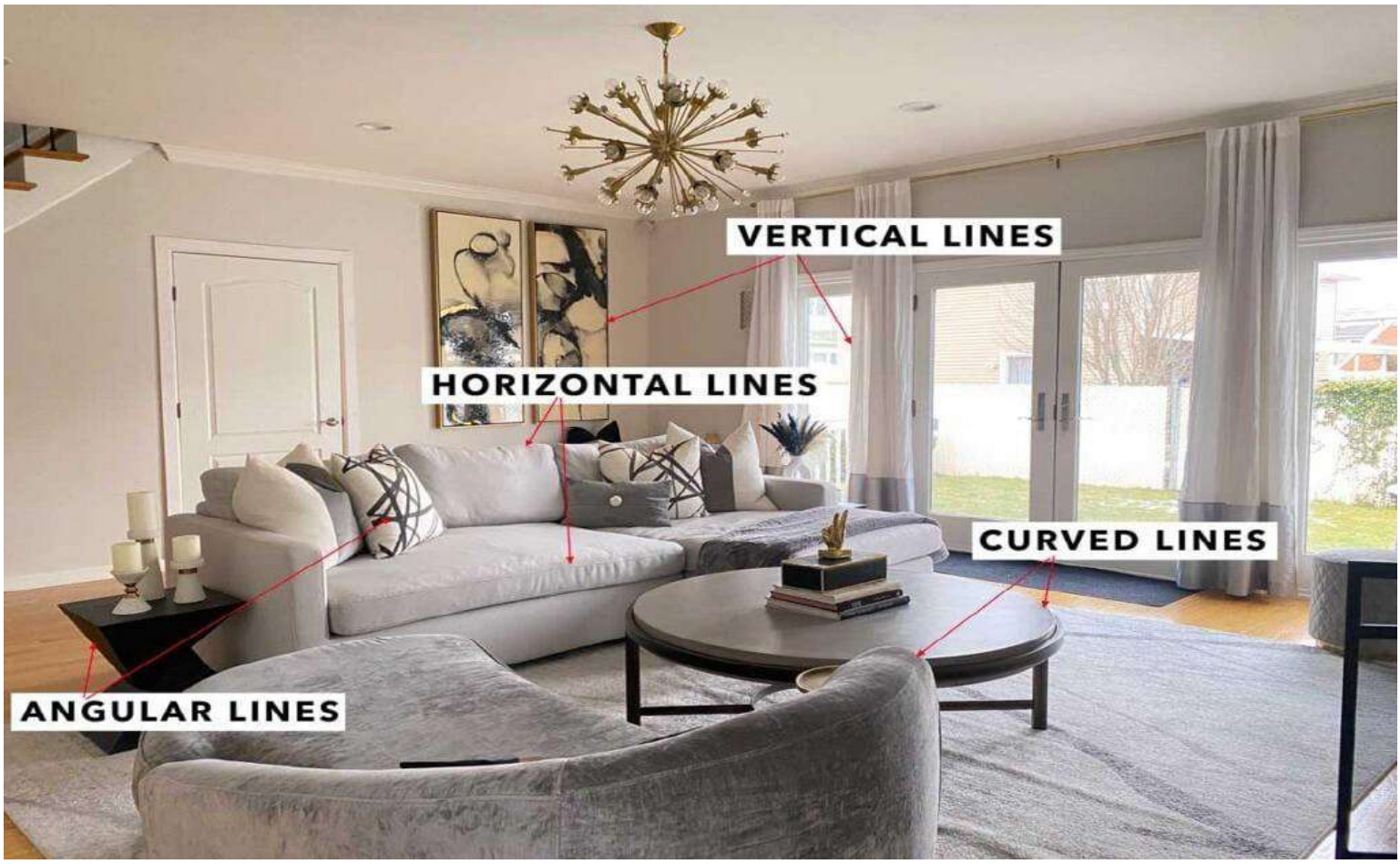
Examples:

- Curved sofa designs.
- Round mirrors.
- Circular tables.
- Arched doorways.

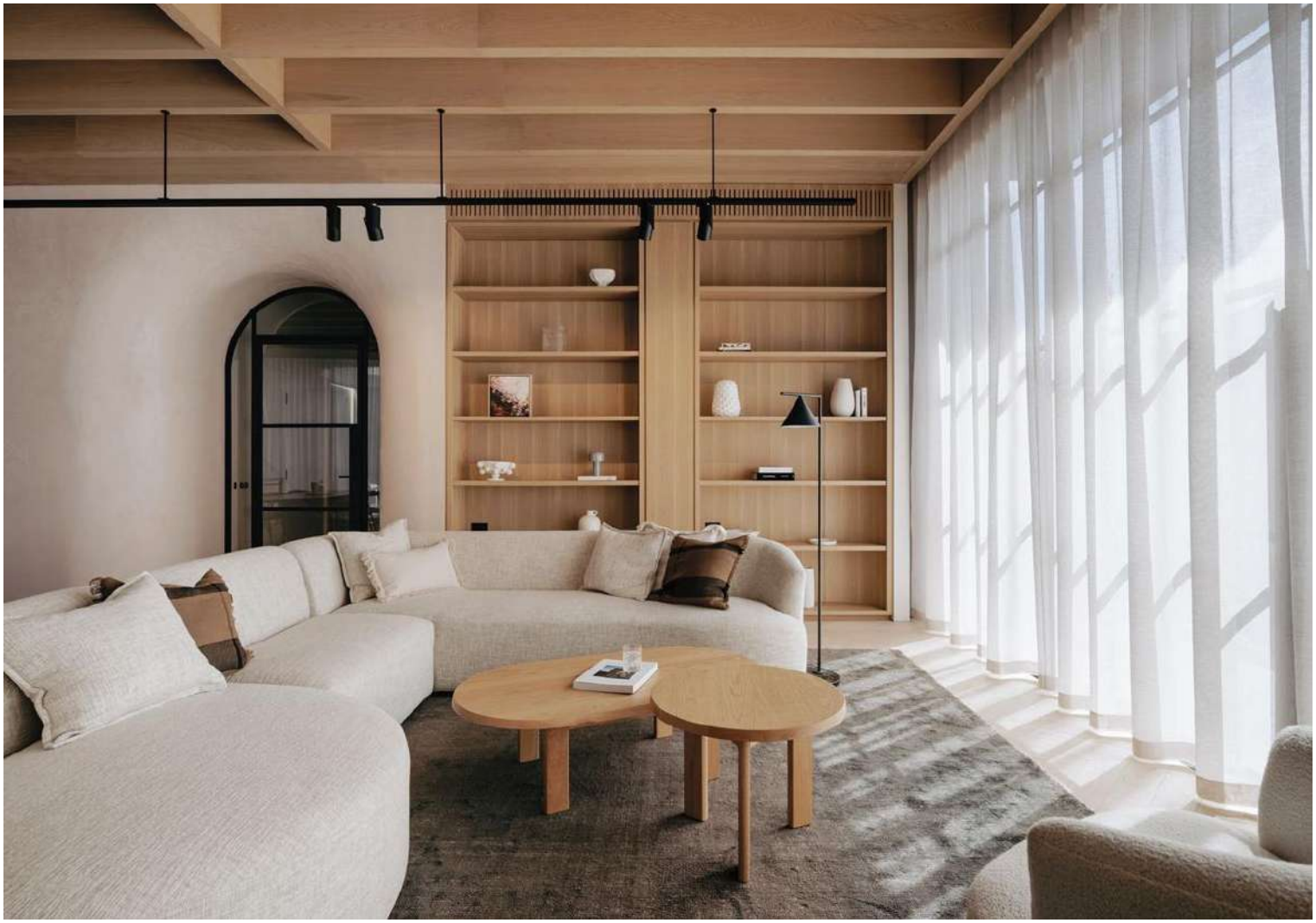
Effects of curved lines:

1. Create softness and relaxation.

2. Reduce the harsh appearance of straight lines.
3. Introduce elegance.
4. Create a welcoming atmosphere.







Importance of lines in interior decoration

1. Influence the perceived size and shape of a room.
2. Create visual movement.
3. Introduce order and organisation.
4. Establish balance.
5. Direct attention to important features.
6. Improve the appearance of furniture and furnishings.

2.4 Form

Meaning of form

Form refers to the three-dimensional shape or physical appearance of an object in interior decoration.

It describes objects according to their length, width and height.

Forms are used in furniture, accessories, lighting equipment, flower arrangements and architectural features.

Types of forms

a) Geometric forms

These are regular forms based on mathematical shapes.

Examples:

- Squares.
- Rectangles.
- Circles.
- Triangles.
- Cylinders.
- Cubes.

Applications:

- Square coffee tables.
- Rectangular dining tables.
- Circular mirrors.
- Cylindrical flower vases.

b) Organic forms

These are irregular, natural or free-flowing forms inspired by nature.

Examples:

- Natural stones.
- Tree branches.
- Leaves.
- Flowers.
- Curved natural wood.
- Decorative objects resembling animals.







Importance of form

1. Creates visual interest.
2. Determines the appearance of furniture and accessories.
3. Contributes to balance and harmony.
4. Reflects the intended style of a room.
5. Creates variety in interior decoration.
6. Influences the efficient use of available space.

Examples of form in a Kenyan home

- A rectangular dining table.
- Round woven baskets.
- Cylindrical clay flower pots.
- Curved wooden seats.
- Square decorative cushions.

2.5 Colour

Meaning of colour

Colour refers to the visual appearance of an object resulting from the way it reflects or absorbs light.

Colour is one of the most important elements of interior decoration because it influences the mood, atmosphere, appearance and perceived size of a room.

For example, light-coloured walls can make a small room appear more spacious, while dark colours can create a warm and intimate atmosphere.

2.5.1 Categories of Colours

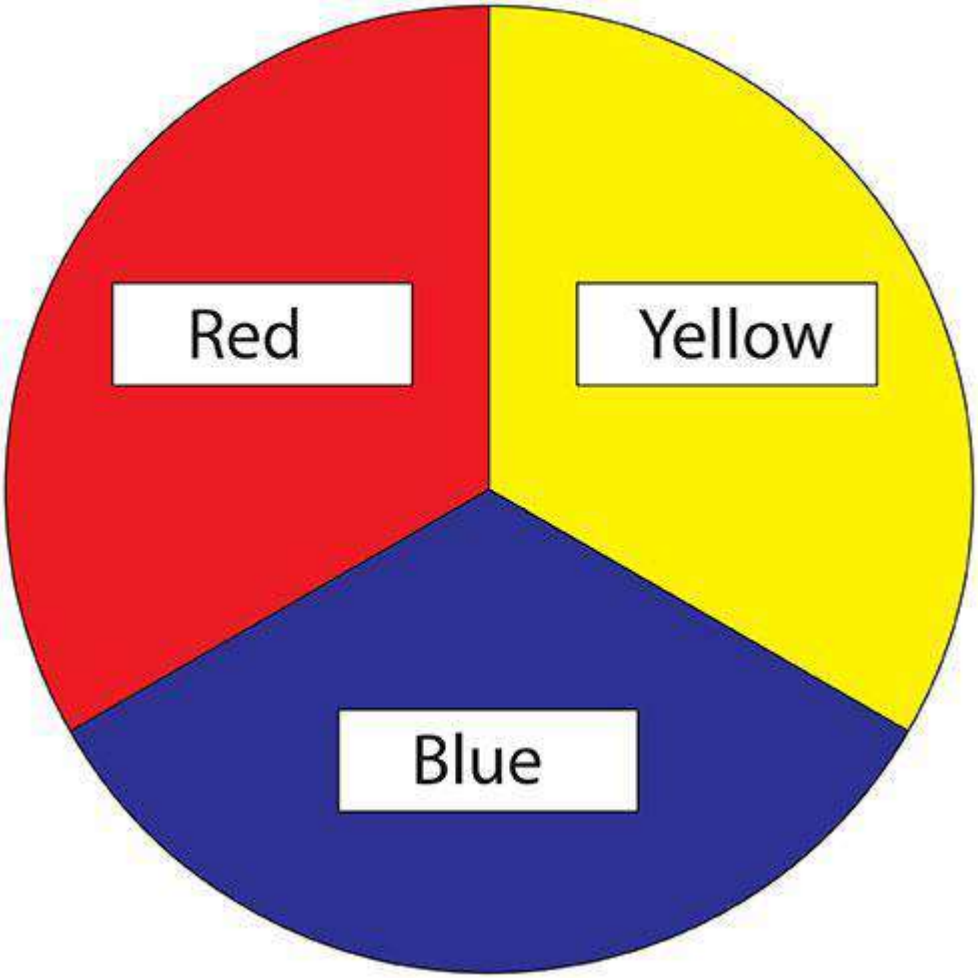
Colours are classified into different categories depending on how they are produced and their visual characteristics.

A. Primary colours

Primary colours are basic colours that cannot be obtained by mixing other colours in the traditional artists' colour wheel.

The three primary colours are:

1. Red.
2. Yellow.
3. Blue.



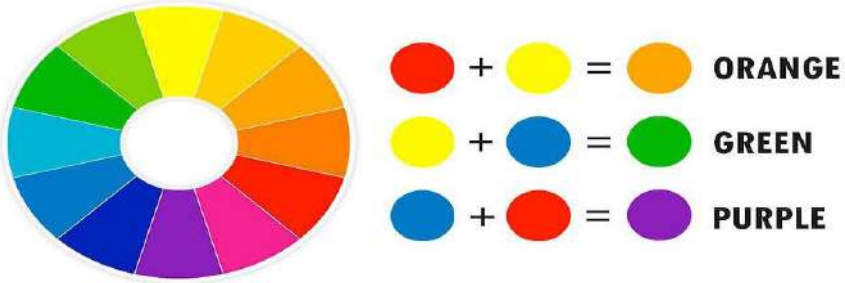
Uses of primary colours in interior decoration

- Red can introduce energy and excitement.
- Yellow can create a cheerful and welcoming atmosphere.
- Blue can create a calm and relaxing environment.

B. Secondary colours

Secondary colours are produced by mixing two primary colours in equal proportions.

Primary colours mixed	Secondary colour
Red + Yellow	Orange
Yellow + Blue	Green
Blue + Red	Violet/Purple



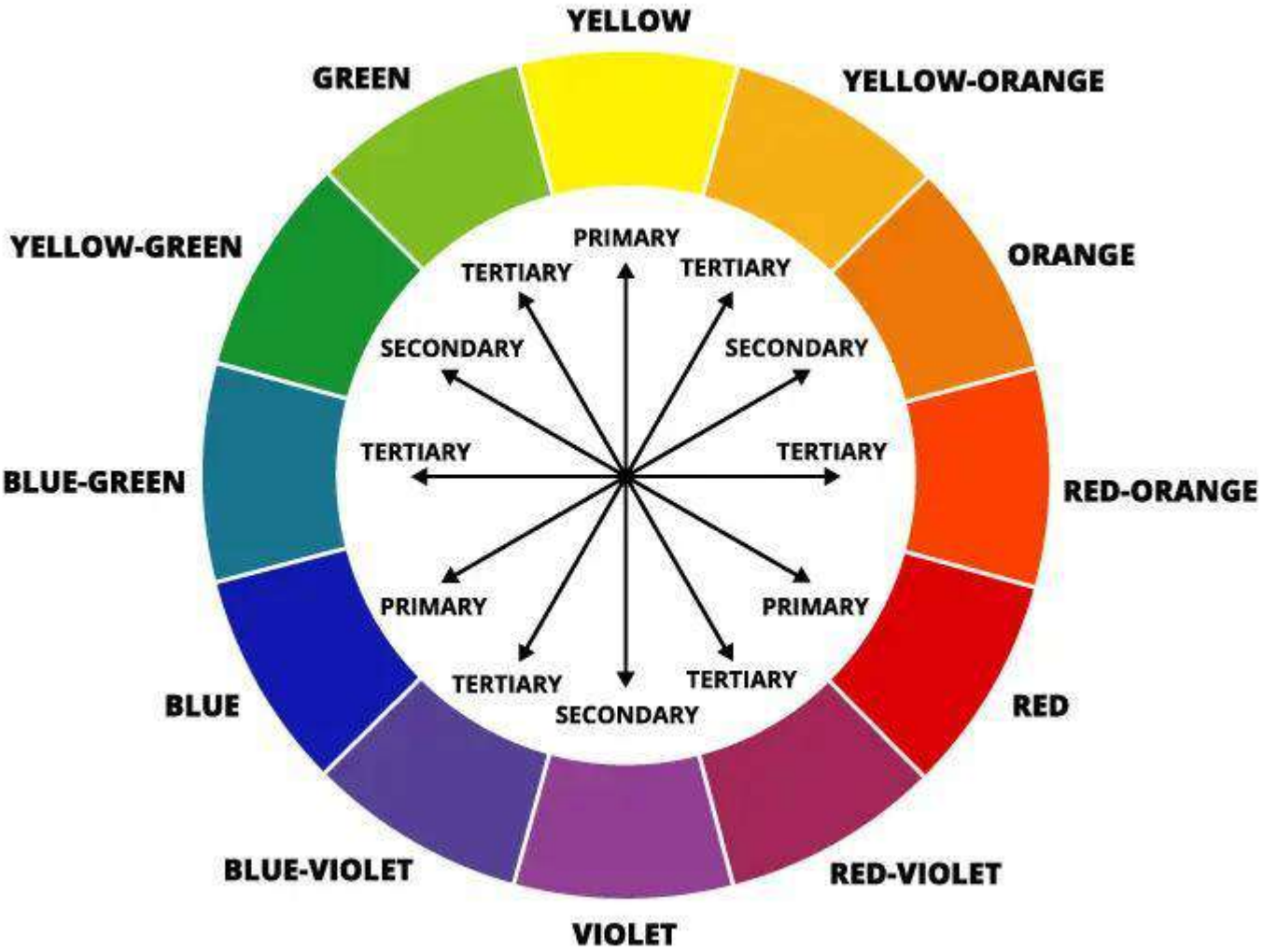
C. Tertiary colours

Tertiary colours are produced by mixing a primary colour with an adjacent secondary colour on the traditional colour wheel.

Examples include:

1. Red-orange.
2. Yellow-orange.
3. Yellow-green.
4. Blue-green.
5. Blue-violet.
6. Red-violet.

These colours provide variety and subtle differences in interior decoration.



2.5.2 Warm Colours

Warm colours are colours associated with sunlight, fire, heat and energy.

Examples:

- Red.
- Orange.
- Yellow.

- Red-orange.
- Yellow-orange.

Effects of warm colours in interior decoration

1. Create a warm and welcoming atmosphere.
2. Make large spaces feel more intimate.
3. Create excitement and energy.
4. Attract attention.
5. Make objects appear visually closer.
6. Can make a room feel smaller when used extensively.

Applications of warm colours

- Orange in dining spaces.
- Yellow in kitchens.
- Terracotta in living rooms.
- Warm red accents in selected decorative features.



2.5.3 Cool Colours

Cool colours are colours associated with water, vegetation, the sky and natural environments.

Examples:

- Blue.
- Green.

- Violet.
- Blue-green.
- Blue-violet.

Effects of cool colours in interior decoration

1. Create a calm and relaxing atmosphere.
2. Make small rooms appear larger.
3. Create a refreshing environment.
4. Reduce the feeling of visual heat.
5. Promote a peaceful sleeping environment.
6. Make objects appear visually farther away.

Applications of cool colours

- Light blue in bedrooms.
- Soft green in sitting rooms.
- Blue-green in bathrooms.
- Pale violet in selected bedroom accessories.



2.5.4 Neutral Colours

Neutral colours are colours that do not strongly dominate a colour scheme and can easily combine with other colours.

Examples:

- White.
- Black.
- Grey.

- Beige.
- Cream.
- Brown.

Importance of neutral colours

1. Provide a background for brighter colours.
2. Create a simple and elegant appearance.
3. Make it easier to change decorative accessories.
4. Promote visual balance.
5. Complement different furniture styles.
6. Create a timeless appearance.

Kenyan household applications

- Cream walls with brown furniture.
- White curtains with grey sofas.
- Beige walls with green indoor plants.
- Grey floor tiles with wooden furniture.

2.5.5 Colour Schemes

Meaning of a colour scheme

A colour scheme is an organised combination of colours selected for use in decorating a room or interior space.

A good colour scheme creates harmony, balance and visual appeal.

The main colour schemes include:

A. Monochromatic colour scheme

This is a colour scheme that uses different tints, tones and shades of one colour.

For example, a blue monochromatic scheme may include:

- Pale blue.
- Sky blue.
- Medium blue.
- Navy blue.



Advantages

1. Creates unity and harmony.
2. Produces a simple and organised appearance.
3. Makes decoration easier.
4. Creates a sophisticated appearance.
5. Reduces colour clashes.

Disadvantages

1. May appear monotonous.
2. Can lack visual excitement.
3. Requires variation in texture and tone to avoid dullness.

B. Complementary colour scheme

This is a colour scheme that uses two colours positioned opposite each other on the traditional colour wheel.

Examples:

- Red and green.
- Blue and orange.
- Yellow and violet.



Advantages

1. Creates strong contrast.
2. Makes decorative features stand out.
3. Creates visual excitement.
4. Introduces variety.

Disadvantages

1. Excessive use may create visual discomfort.
2. Some combinations may appear too bright.
3. Requires careful balancing.

C. Analogous colour scheme

This is a colour scheme that uses three or more colours positioned next to each other on the colour wheel.

Examples:

- Yellow, yellow-orange and orange.
- Blue, blue-green and green.
- Red, red-orange and orange.



Advantages

1. Creates harmony.
2. Produces a natural appearance.
3. Makes colour selection easier.
4. Creates a peaceful environment.

Disadvantages

1. May lack contrast.
2. Can appear monotonous.
3. Requires careful selection of a dominant colour.

D. Triadic colour scheme

This is a colour scheme that uses three colours equally spaced around the traditional colour wheel.

Examples:

- Red, yellow and blue.
- Orange, green and violet.



Advantages

1. Creates variety.
2. Produces a lively appearance.
3. Provides good colour contrast.
4. Encourages creativity.

Disadvantages

1. Can appear overwhelming when all colours are used equally.
2. Requires careful balancing.
3. May create visual confusion if poorly applied.

2.5.6 Factors to Consider When Selecting Colours for Interior Decoration

1. **Purpose of the room:** Bedrooms require relaxing colours, while playrooms may benefit from cheerful colours.
2. **Size of the room:** Light colours can make small rooms appear spacious.
3. **Natural lighting:** Rooms receiving limited sunlight may benefit from lighter and warmer colours.
4. **Artificial lighting:** Bulbs can influence how colours appear.
5. **Personal preferences:** Occupants should participate in colour selection.
6. **Age of occupants:** Children's rooms may use cheerful colours, while older occupants may prefer calmer combinations.
7. **Climate:** In warm areas, cool colours may help create a visually refreshing environment.
8. **Furniture colour:** Wall colours should complement existing furniture.
9. **Cost and availability:** Locally available paints, fabrics and decorative materials should be considered.

10. **Maintenance:** Some colours and finishes show dirt more easily than others.
11. **Cultural preferences:** Some colours may have particular cultural meanings.
12. **Purpose and mood:** The desired atmosphere should guide colour selection.

2.6 Texture

Meaning of texture

Texture refers to the surface quality or feel of an object, whether it is smooth, rough, soft, hard, shiny or coarse.

Texture contributes to the visual and physical appeal of an interior space.

Types of texture

A. Actual texture

This refers to the real physical surface quality of an object that can be felt by touching it.

Examples:

- Rough sisal mats.
- Smooth glass tables.
- Soft cotton cushions.
- Coarse woven baskets.
- Polished wooden furniture.

B. Visual or implied texture

This refers to the appearance of a surface that gives an impression of texture even when it may feel different when touched.

Examples:

- Wallpaper printed to resemble bricks.
- Floor tiles designed to resemble wood.
- Fabric printed with a stone pattern.
- Paint finishes that resemble natural stone.







Examples of textures used in interior decoration

Material	Texture
Cotton	Soft
Sisal	Coarse
Glass	Smooth
Polished wood	Smooth
Natural stone	Rough or smooth
Wool	Soft
Woven basket	Coarse
Metal	Smooth or polished

Importance of texture

1. Creates visual interest.
2. Makes rooms more attractive.
3. Adds variety to interior spaces.
4. Improves comfort through soft furnishings.
5. Creates contrast.
6. Can make a room appear warm or cool.
7. Reflects personal taste.
8. Enhances the appearance of furniture and accessories.

Practical application in Kenya

A sitting room may combine:

- A smooth wooden coffee table.
- Soft cotton cushions.
- A woven sisal rug.
- Glass decorative accessories.
- Cotton curtains.

This creates an interesting mixture of textures.

2.7 Light

Meaning of light

Light refers to the natural or artificial illumination used to make an interior space visible, comfortable, safe and attractive.

Lighting influences the appearance of colours, furniture, textures and decorative accessories.

Types of lighting

A. Natural lighting

Natural lighting is illumination obtained from the sun.

Sources include:

- Windows.
- Skylights.
- Glass doors.
- Ventilated openings.



Advantages of natural lighting

1. Reduces dependence on electricity during the day.
2. Improves visibility.
3. Makes rooms appear bright and attractive.
4. Supports natural daily activities.
5. Can improve the general feeling of wellbeing.

Disadvantages

1. May cause excessive heat.
2. Can fade curtains, carpets and furniture.
3. May produce glare.

4. Depends on weather and time of day.
5. Excessive direct sunlight can cause discomfort.

B. Artificial lighting

Artificial lighting is illumination produced using electrical or other manufactured light sources.

Examples:

- LED bulbs.
- Fluorescent lamps.
- Chandeliers.
- Table lamps.
- Wall lamps.
- Floor lamps.



Types of artificial lighting according to function

1. General or ambient lighting

This is lighting that provides overall illumination throughout a room.

Examples:

- Ceiling-mounted LED bulbs.
- Ceiling lights.

- Recessed lighting.

Uses:

- Provides general visibility.
- Allows people to move around safely.
- Illuminates the entire room.

2. Task lighting

This is lighting designed to illuminate a specific area where an activity is performed.

Examples:

- Reading lamps.
- Kitchen worktop lights.
- Study desk lamps.
- Sewing machine lamps.

Uses:

- Improves visibility during tasks.
- Reduces eye strain caused by inadequate lighting.
- Improves accuracy during activities.

3. Accent lighting

This is lighting used to highlight a particular decorative feature or object.

Examples:

- Picture lights.
- Spotlights on artwork.
- Lights highlighting indoor plants.
- Display cabinet lighting.

Uses:

- Draws attention to decorative features.
- Creates visual interest.
- Improves the appearance of selected objects.

Factors to consider when selecting lighting

1. Purpose of the room.
2. Size of the room.
3. Availability of natural light.
4. Colour of walls and ceilings.
5. Cost of electricity.

6. Safety of electrical installations.
7. Type of activities performed.
8. Position of windows.
9. Type of furniture and accessories.
10. Energy efficiency of lighting equipment.

2.8 Pattern

Meaning of pattern

Pattern refers to the repeated arrangement of lines, shapes, colours, motifs or designs on a surface.

Patterns are used in fabrics, wallpapers, carpets, curtains, cushions, floor tiles and other decorative materials.

Types of patterns

A. Geometric patterns

These are patterns formed using regular geometric shapes.

Examples:

- Squares.
- Circles.
- Triangles.
- Diamonds.
- Stripes.

B. Floral patterns

These are patterns inspired by flowers, leaves and other plant forms.

Examples:

- Rose designs.
- Leaf prints.
- Flower motifs.
- Botanical designs.

C. Abstract patterns

These are designs made up of irregular shapes, lines and forms that may not represent recognisable objects.

D. Animal patterns

These are patterns inspired by animal skins, markings and other animal features.

Examples:

- Zebra-inspired patterns.
- Leopard-inspired patterns.

E. Striped patterns

These are patterns consisting of repeated straight or curved lines.

F. Checked patterns

These are patterns formed by intersecting horizontal and vertical lines.







Importance of patterns in interior decoration

1. Introduce variety.
2. Create visual interest.
3. Improve the appearance of furnishings.
4. Express personal taste.
5. Create focal points.
6. Help establish a decorative theme.
7. Add character to plain rooms.

Factors to consider when selecting patterns

1. Size of the room.
2. Colour scheme.
3. Size of the furniture.
4. Purpose of the room.
5. Personal preferences.
6. Existing patterns in the room.
7. Cost and availability.
8. Ease of cleaning and maintenance.

3.0 BALANCE, HARMONY, CONTRAST AND PROPORTION

These are important principles applied when using the elements of interior design.

3.1 Balance

Meaning of balance

Balance refers to the equal or appropriate distribution of visual weight within a room to create a stable and organised appearance.

Balance ensures that one side of a room does not appear excessively heavy compared with another.

Types of balance

A. Symmetrical balance

This occurs when similar objects are arranged equally on either side of a central point.

Examples:

- Two identical chairs placed on either side of a coffee table.
- Two matching lamps placed on either side of a bed.
- Identical flower arrangements placed on both ends of a dining table.



Advantages:

1. Creates order.
2. Produces a formal appearance.

3. Creates a sense of stability.
4. Makes decoration easier.

B. Asymmetrical balance

This occurs when different objects are arranged to create an equal visual effect without being identical.

Examples:

- A large sofa balanced by two smaller chairs.
- A large flower vase balanced by several smaller accessories.
- A large wall picture balanced by a decorative shelf.



Advantages:

1. Creates a relaxed atmosphere.
2. Introduces creativity.
3. Provides visual interest.
4. Allows the use of different decorative objects.

C. Radial balance

This occurs when objects are arranged around a central point.

Examples:

- Chairs arranged around a round dining table.

- Decorative objects arranged around a central flower vase.
- Seats arranged in a circular pattern.



3.2 Harmony

Meaning of harmony

Harmony refers to the pleasing relationship between different elements of interior design, making them appear to belong together.

It is achieved when colours, furniture, furnishings, textures, patterns and accessories complement one another.

Examples of harmony

1. Using curtains that complement the wall colour.
2. Selecting cushions that match the sofa colour.
3. Combining wooden furniture with natural woven accessories.
4. Using similar decorative styles throughout a room.
5. Selecting floor coverings that complement furniture.

Importance of harmony

1. Creates unity.
2. Improves visual appeal.

3. Produces a peaceful atmosphere.
4. Prevents unnecessary visual confusion.
5. Makes a room appear well planned.

3.3 Contrast

Meaning of contrast

Contrast refers to the use of noticeably different elements to create visual interest and make certain features stand out.

Examples:

- Black cushions on a white sofa.
- Light curtains against dark walls.
- Smooth glass surfaces combined with rough woven mats.
- Bright flowers in a neutral-coloured room.



Importance of contrast

1. Creates visual interest.
2. Prevents monotony.
3. Highlights important features.
4. Adds variety.
5. Makes decorative accessories stand out.

Ways of creating contrast

- Using light and dark colours.
- Combining different textures.
- Combining large and small objects.
- Using straight and curved lines.
- Combining plain and patterned fabrics.

3.4 Proportion

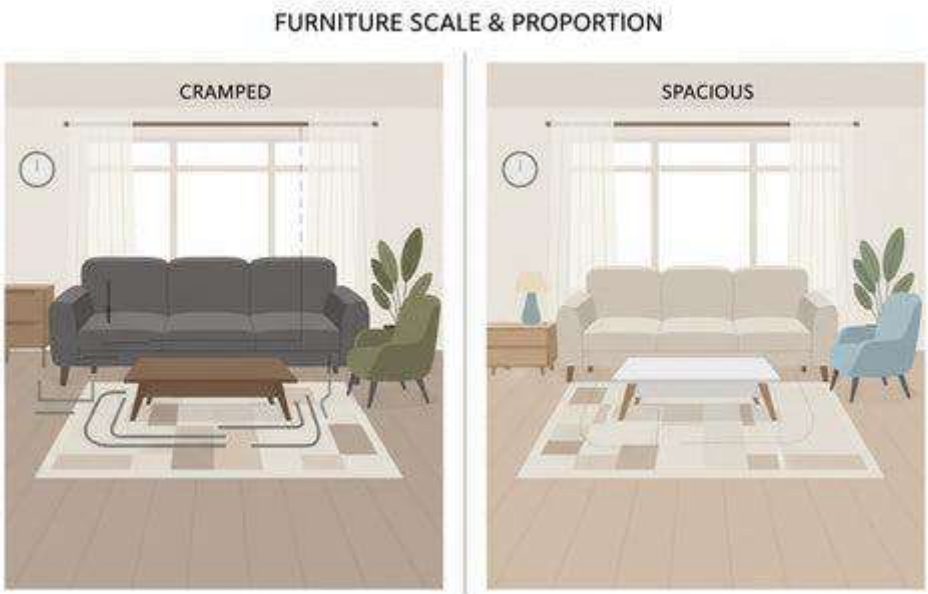
Meaning of proportion

Proportion refers to the relationship between the sizes of different objects in a room and their relationship to the overall space.

It ensures that furniture, accessories and decorative items are appropriately sized in relation to each other and the room.

Examples

1. Using a small coffee table in a small sitting room.
2. Selecting curtains that suit the height of windows.
3. Avoiding oversized furniture in narrow rooms.
4. Using a suitably sized flower vase on a dining table.
5. Selecting a rug that fits the furniture arrangement.



Importance of proportion

1. Prevents overcrowding.
2. Improves visual balance.
3. Creates a comfortable environment.
4. Promotes efficient use of space.

5. Makes decorative arrangements attractive.

4.0 FURNISHINGS USED IN INTERIOR DECORATION

4.1 Meaning of Furnishings

Furnishings are the movable or removable items used in a room to provide comfort, convenience, functionality and beauty.

They include furniture, soft furnishings and decorative accessories.

In interior decoration, furnishings are broadly categorised into:

1. Hard furnishings.
2. Soft furnishings.

4.2 Hard Furnishings

Meaning

Hard furnishings are durable household items, usually made from materials such as wood, metal, glass, plastic, stone and other rigid materials.

They are mainly used to provide support, storage, functionality and decoration.







Examples of hard furnishings

1. Sofas and seats.
2. Tables.
3. Beds.
4. Wardrobes.
5. Cabinets.
6. Shelves.
7. Bookshelves.
8. Television stands.
9. Mirrors.
10. Flower stands.
11. Dining chairs.
12. Shoe racks.
13. Bedside tables.
14. Display cabinets.
15. Sideboards.

Materials used to make hard furnishings

A. Wood

Wood is obtained from trees and is widely used to manufacture furniture.

Examples:

- Beds.
- Tables.
- Chairs.
- Cabinets.
- Wardrobes.

Advantages:

1. Durable when properly maintained.
2. Attractive natural appearance.
3. Easy to shape and design.
4. Available in different finishes.
5. Can be repaired and refinished.

Disadvantages:

1. Some types are expensive.

2. Can be damaged by termites.
3. May absorb moisture.
4. Can crack or warp when poorly maintained.

B. Metal

Metal is used to make strong and durable furnishings.

Examples:

- Metal beds.
- Steel chairs.
- Metal shelves.
- Bed frames.

Advantages:

1. Strong.
2. Durable.
3. Resistant to termites.
4. Suitable for modern furniture designs.

Disadvantages:

1. Can rust.
2. Some metal furniture is heavy.
3. May become uncomfortable without cushions.
4. Can become hot when exposed to direct sunlight.

C. Glass

Glass is used in decorative and functional furniture.

Examples:

- Glass coffee tables.
- Display cabinets.
- Mirror panels.
- Glass shelves.

Advantages:

1. Attractive appearance.
2. Easy to clean.
3. Creates a sense of openness.
4. Reflects light.

Disadvantages:

1. Can break easily.
2. May cause injuries when shattered.
3. Requires frequent cleaning.
4. Some glass furniture is expensive.

D. Plastic

Plastic is used to make lightweight household furnishings.

Examples:

- Plastic chairs.
- Plastic tables.
- Storage cabinets.
- Decorative containers.

Advantages:

1. Lightweight.
2. Easy to clean.
3. Available in different colours.
4. Often affordable.
5. Resistant to rust.

Disadvantages:

1. Some types are less durable.
2. Can crack or break.
3. May fade in sunlight.
4. Some plastic products have environmental disposal challenges.

E. Stone

Stone is used in selected interior features and furniture.

Examples:

- Marble countertops.
- Granite surfaces.
- Stone decorative stands.
- Stone flooring.

Advantages:

1. Durable.
2. Attractive natural appearance.

3. Resistant to many forms of wear.
4. Suitable for long-term use.

Disadvantages:

1. Can be expensive.
2. Heavy.
3. Some surfaces require sealing.
4. May become slippery when wet.

4.3 Soft Furnishings

Meaning

Soft furnishings are household decorative and functional items made mainly from fabrics, fibres, leather or other flexible materials.

They are used to improve comfort, warmth, privacy and the appearance of interior spaces.






KIT KEMP
VEERLE GRENNEY

Examples of soft furnishings

1. Curtains.
2. Cushion covers.
3. Carpets.
4. Rugs.
5. Tablecloths.
6. Bedspreads.
7. Blankets.
8. Duvets.
9. Pillowcases.
10. Upholstery fabrics.
11. Door curtains.
12. Sofa throws.
13. Table runners.
14. Fabric wall hangings.

Materials used to make soft furnishings

A. Cotton

Cotton is a natural fibre obtained from cotton plants.

Uses:

- Curtains.
- Bed sheets.
- Cushion covers.
- Tablecloths.

Advantages:

1. Comfortable.
2. Absorbent.
3. Easy to wash.
4. Allows air circulation.
5. Available in different designs.

Disadvantages:

1. Creases easily.
2. May shrink during washing.
3. Can fade with repeated exposure to sunlight.

4. May require ironing.

B. Wool

Wool is a natural fibre obtained mainly from sheep.

Uses:

- Carpets.
- Rugs.
- Blankets.
- Decorative throws.

Advantages:

1. Provides warmth.
2. Comfortable.
3. Durable when properly maintained.
4. Has good insulating properties.

Disadvantages:

1. Can be expensive.
2. May shrink if washed incorrectly.
3. Can attract certain pests.
4. Requires appropriate care.

C. Polyester

Polyester is a synthetic fibre made from chemical substances.

Uses:

- Curtains.
- Cushion covers.
- Upholstery.
- Bedspreads.

Advantages:

1. Crease resistant.
2. Durable.
3. Dries quickly.
4. Retains its shape.
5. Often affordable.

Disadvantages:

1. May retain body odours.

2. Can accumulate static electricity.
3. Some types are less breathable than cotton.
4. Can be damaged by excessive heat.

D. Silk

Silk is a natural fibre produced by silkworms.

Uses:

- Decorative cushions.
- Luxury curtains.
- Decorative wall hangings.

Advantages:

1. Smooth.
2. Shiny.
3. Attractive.
4. Lightweight.

Disadvantages:

1. Expensive.
2. Requires delicate cleaning.
3. Can be damaged by direct sunlight.
4. Can stain easily.

E. Sisal

Sisal is a natural fibre obtained from the leaves of the sisal plant.

Uses:

- Rugs.
- Mats.
- Decorative baskets.
- Floor coverings.

Advantages:

1. Strong.
2. Durable.
3. Locally available in Kenya.
4. Biodegradable.
5. Suitable for natural decorative themes.

Disadvantages:

1. Can feel rough.
2. Absorbs moisture.
3. May be difficult to clean when stained.
4. Can deteriorate if kept damp.

4.4 Differences Between Hard and Soft Furnishings

Hard furnishings	Soft furnishings
Usually rigid in structure.	Usually flexible in structure.
Often made from wood, metal, glass or plastic.	Often made from fabrics and fibres.
Provide support and storage.	Provide comfort and decoration.
Examples include beds and tables.	Examples include curtains and cushions.
Usually maintain a fixed shape.	Can be folded, draped or reshaped.
Often require polishing, wiping or repair.	Often require washing, vacuuming or fabric care.

4.5 Factors to Consider When Selecting Furnishings

1. **Cost:** Select furnishings that fit within the household budget.
2. **Durability:** Choose items that can withstand regular use.
3. **Purpose:** Ensure furnishings serve their intended functions.
4. **Size:** Select furnishings that fit the available space.
5. **Colour:** Ensure colours complement the room's colour scheme.
6. **Texture:** Select suitable textures for comfort and visual appeal.
7. **Ease of cleaning:** Choose materials that are easy to maintain.
8. **Safety:** Avoid sharp edges and unstable furniture.
9. **Availability:** Consider locally available products.
10. **Climate:** Select materials suitable for local climatic conditions.
11. **Occupants:** Consider children, older people and persons with disabilities.
12. **Environmental impact:** Prefer sustainable and responsibly sourced materials.

5.0 FLOWER ARRANGEMENT IN INTERIOR DECORATION

5.1 Meaning of Flower Arrangement

Flower arrangement refers to the art of selecting, organising and placing flowers and foliage in a container or other suitable support to create an attractive decorative display.

It involves arranging fresh, dried or artificial flowers according to colour, shape, size, texture and design.

Flower arrangement is an important aspect of interior decoration because it introduces natural beauty and colour into living spaces.







5.2 Importance of Flower Arrangement in Interior Decoration

1. **Improves beauty:** Flowers make rooms attractive and appealing.
2. **Introduces colour:** Flowers provide natural colours that complement interior colour schemes.

3. **Creates focal points:** A flower arrangement can attract attention in a room.
4. **Promotes relaxation:** Attractive natural displays may create a peaceful atmosphere.
5. **Reflects personal taste:** Different flower combinations express individual creativity.
6. **Complements furnishings:** Flower arrangements can match curtains, cushions and furniture.
7. **Creates a welcoming atmosphere:** Flowers can make visitors feel welcome.
8. **Promotes appreciation of nature:** Natural flowers introduce elements of the outdoors into indoor spaces.
9. **Enhances special occasions:** Flower arrangements decorate homes during celebrations, weddings and family gatherings.
10. **Supports local enterprise:** Purchasing flowers can support local flower growers and traders.

5.3 Types of Flowers Used in Flower Arrangement

Flowers may be classified into three main categories according to their use in arrangements.

A. Focal flowers

These are large or prominent flowers that attract attention and form the main feature of an arrangement.

Examples:

- Roses.
- Lilies.
- Gerberas.
- Sunflowers.
- Carnations.

B. Filler flowers

These are small flowers used to fill spaces between the main flowers.

Examples:

- Baby's breath.
- Small chrysanthemums.
- Aster flowers.

C. Line flowers

These are flowers with long stems and elongated shapes that establish the height and outline of an arrangement.

Examples:

- Gladiolus.
- Delphinium.
- Snapdragons.



5.4 Materials and Equipment Used in Flower Arrangement

Materials

1. Fresh flowers.
2. Dried flowers.
3. Artificial flowers.
4. Leaves and foliage.
5. Twigs and branches.
6. Moss.

7. Floral foam.
8. Decorative stones.
9. Water.
10. Decorative ribbons.

Equipment

1. Flower vase.
2. Secateurs.
3. Sharp knife.
4. Scissors.
5. Watering can.
6. Bucket.
7. Floral wire.
8. Floral tape.
9. Flower holder.
10. Gloves.



5.5 Guidelines for Flower Arrangement

The following guidelines should be observed when preparing flower arrangements:

1. **Select fresh flowers:** Choose flowers that are healthy and free from damage.
2. **Select suitable containers:** Use a vase or container that complements the flowers.
3. **Consider colour:** Choose colours that harmonise with the room.
4. **Consider proportion:** Ensure the arrangement is appropriately sized for the container and the space.
5. **Maintain balance:** Distribute flowers evenly to prevent the arrangement from appearing unstable.

6. **Consider texture:** Combine different textures carefully.
7. **Vary flower heights:** Use flowers of different heights to create depth.
8. **Remove damaged leaves:** Remove dead or damaged plant parts.
9. **Cut stems appropriately:** Cut stems diagonally using a clean, sharp tool.
10. **Provide sufficient water:** Place fresh flowers in clean water.
11. **Avoid overcrowding:** Allow individual flowers to be visible.
12. **Consider the viewing angle:** Arrange flowers so that they look attractive from the intended viewing direction.
13. **Select an appropriate location:** Avoid placing delicate flowers in excessive direct sunlight or near heat sources.
14. **Maintain cleanliness:** Clean containers regularly to prevent bacterial growth.

5.6 Shapes and Designs of Flower Arrangement

Flower arrangements can be organised into different shapes depending on their purpose and the desired appearance.

A. Round arrangement

Flowers are arranged to form a rounded shape.



Uses:

- Dining tables.
- Coffee tables.
- Reception areas.

B. Triangular arrangement

Flowers are arranged to form a triangular outline.



Uses:

- Side tables.
- Reception areas.
- Decorative displays.

C. Vertical arrangement

Flowers are arranged mainly in an upright direction.



Uses:

- Corners.
- Narrow tables.
- Entrance areas.

D. Horizontal arrangement

Flowers are arranged to spread sideways.



Uses:

- Dining tables.
- Long display surfaces.
- Conference tables.

E. Crescent arrangement

Flowers are arranged in a curved shape resembling a crescent moon.



Uses:

- Decorative tables.
- Reception areas.
- Special occasions.

F. Fan-shaped arrangement

Flowers are arranged to spread outwards like a fan.



Uses:

- Display cabinets.
- Sideboards.
- Special event decoration.

5.7 Sources of Flowers in Kenya

Flowers used for interior decoration can be obtained from:

1. Home gardens.
2. Flower farms.
3. Local flower markets.
4. Florists.
5. Roadside flower vendors.
6. Friends and neighbours.
7. Carefully managed natural gardens.

Examples of flowers commonly used include roses, lilies, gerberas, chrysanthemums, carnations, sunflowers and locally available seasonal flowers.

Note: Flowers should be obtained responsibly. Learners should avoid picking protected wild plants or damaging natural habitats.

5.8 Care and Maintenance of Fresh Flower Arrangements

1. Change the water regularly.
2. Wash the flower vase.
3. Remove wilted flowers.
4. Trim stems when necessary.
5. Remove leaves below the water level.

6. Keep arrangements away from excessive heat.
7. Avoid direct strong sunlight for delicate flowers.
8. Use clean containers.
9. Add suitable flower preservatives where available.
10. Keep flowers away from children and pets where the plant may be harmful.

5.9 Uses of Flower Arrangements in Different Rooms

Room	Uses of flower arrangements
Sitting room	Creates a welcoming atmosphere.
Dining room	Enhances the appearance of the dining table.
Bedroom	Adds beauty and colour.
Entrance hall	Welcomes visitors.
Study room	Adds decorative interest.
Bathroom	Introduces a fresh decorative appearance.
Reception area	Creates an attractive first impression.

6.0 MAKING ITEMS FOR INTERIOR DECORATION

6.1 Meaning of Decorative Accessories

Decorative accessories are additional objects placed in a room to improve its appearance, express personal taste and complement furniture and furnishings.

They may be functional or purely decorative.

Examples

1. Flower vases.
2. Wall hangings.
3. Picture frames.
4. Decorative baskets.
5. Candlesticks.
6. Table ornaments.
7. Mirrors.
8. Indoor plants.
9. Decorative bowls.
10. Sculptures.
11. Handmade pottery.
12. Beaded ornaments.










6.2 Locally Available Materials for Making Decorative Items

Kenyan households and learners can use locally available and improvised materials to produce attractive decorative items.

Examples include:

Material	Decorative items made
Sisal	Mats, baskets and wall hangings
Reeds	Baskets and decorative screens
Clay	Flower pots and ornaments
Wood	Picture frames and decorative stands
Beads	Decorative ornaments
Fabric remnants	Cushion covers and wall hangings
Waste paper	Paper flowers and decorative models
Glass bottles	Flower vases
Tin cans	Pen holders and plant containers
Dried leaves	Wall decorations
Coconut shells	Decorative bowls
Old clothes	Rugs and cushion covers
Cardboard	Picture frames and decorative displays

6.3 Factors to Consider When Selecting Materials

1. Availability.
2. Cost.
3. Durability.
4. Safety.
5. Ease of handling.
6. Appearance.
7. Environmental friendliness.
8. Intended purpose.
9. Skills required.
10. Ease of maintenance.

6.4 Practical Activity: Making a Decorative Flower Vase from a Waste Glass Bottle



Materials required

1. An empty glass bottle.
2. Water.
3. Soap.
4. Paint suitable for glass.
5. Decorative ribbon.
6. Paintbrush.

7. Decorative string.
8. Fresh or artificial flowers.

Procedure

1. Collect a suitable empty glass bottle.
2. Remove the label carefully.
3. Wash the bottle using soap and clean water.
4. Allow the bottle to dry completely.
5. Select a suitable colour.
6. Apply paint evenly to the bottle.
7. Allow the paint to dry according to the product instructions.
8. Decorate the bottle using ribbons or decorative string.
9. Place fresh or artificial flowers inside.
10. Display the finished vase in a suitable position.

Safety precautions

1. Handle glass bottles carefully.
2. Avoid using cracked bottles.
3. Keep paint away from eyes and mouth.
4. Work in a well-ventilated area.
5. Wash hands after handling paint.
6. Ask for assistance when cutting or modifying materials.

6.5 Practical Activity: Making a Decorative Cushion Cover



Materials required

1. Fabric.
2. Thread.
3. Needle.

4. Scissors.
5. Measuring tape.
6. Pins.
7. Sewing machine where available.
8. Cushion insert.

Procedure

1. Measure the cushion insert.
2. Select suitable fabric.
3. Cut fabric according to the required measurements, allowing for seams.
4. Fold and finish the edges where necessary.
5. Place the fabric pieces together with the right sides facing each other.
6. Pin the edges.
7. Stitch around the edges, leaving an opening.
8. Turn the cover to the right side.
9. Insert the cushion.
10. Close the opening using an appropriate method.
11. Check the finishing.
12. Display the cushion in a suitable room.

Importance of making decorative items

1. Develops creativity.
2. Promotes practical skills.
3. Encourages recycling and reuse.
4. Reduces household expenditure.
5. Promotes environmental conservation.
6. Supports local craftsmanship.
7. Can provide income-generating opportunities.
8. Promotes self-reliance.

7.0 DECORATING A ROOM USING COMPONENTS OF INTERIOR DESIGN

7.1 Meaning of Room Decoration

Room decoration is the process of improving the appearance, comfort and functionality of an interior space through the proper selection and arrangement of furniture, colours, furnishings, accessories and lighting.

It involves applying the elements and principles of interior design to create an attractive and useful environment.

7.2 Steps in Decorating a Room

Step 1: Identify the purpose of the room

Determine the activities that will take place in the room.

Examples:

- Sitting room: relaxation and entertaining visitors.
- Bedroom: sleeping and personal activities.
- Dining room: eating meals.
- Study room: reading and studying.

Step 2: Assess the available space

Measure the room and identify:

- Length.
- Width.
- Height.
- Door positions.
- Window positions.
- Electrical outlets.
- Ventilation openings.

Step 3: Determine the budget

Prepare a budget based on the household's financial ability.

Include:

- Paint.
- Furniture.
- Curtains.
- Floor coverings.
- Decorative accessories.
- Lighting.
- Labour where necessary.

Step 4: Select a suitable colour scheme

Choose colours that complement the purpose and size of the room.

Step 5: Select furniture

Choose furniture according to the available space, purpose and needs of occupants.

Step 6: Arrange furniture

Arrange furniture to:

- Promote free movement.
- Provide sufficient working space.
- Establish balance.
- Avoid blocking doors and windows.

Step 7: Select soft furnishings

Choose appropriate:

- Curtains.
- Cushions.
- Rugs.
- Carpets.
- Tablecloths.
- Bed covers.

Step 8: Introduce decorative accessories

Use appropriate:

- Flower arrangements.
- Wall pictures.
- Mirrors.
- Indoor plants.
- Handmade ornaments.

Step 9: Organise lighting

Ensure that the room has suitable natural and artificial lighting.

Step 10: Apply the principles of interior design

Consider:

- Balance.
- Harmony.
- Contrast.
- Proportion.

Step 11: Evaluate the finished room

Assess whether the room is:

- Attractive.
- Comfortable.
- Functional.
- Safe.

- Clean.
- Properly organised.







7.3 Factors to Consider When Decorating Different Rooms

A. Sitting Room

The sitting room is a space used for relaxation, entertainment and receiving visitors.

Considerations:

1. Comfortable seats.
2. Appropriate seating arrangement.
3. Suitable curtains.
4. Attractive colour scheme.
5. Adequate lighting.
6. Suitable floor covering.
7. Television placement where required.
8. Appropriate flower arrangements.
9. Sufficient movement space.
10. Suitable decorative accessories.

B. Bedroom

The bedroom is a private room mainly used for sleeping and personal activities.

Considerations:

1. Comfortable bed.
2. Suitable mattress.
3. Appropriate beddings.
4. Calming colour scheme.
5. Adequate ventilation.
6. Suitable curtains.
7. Appropriate wardrobe.
8. Bedside table.
9. Reading light where required.
10. Clean and organised surroundings.

C. Kitchen

The kitchen is a room used for food preparation, cooking and related household activities.

Considerations:

1. Adequate lighting.
2. Good ventilation.
3. Easy-to-clean surfaces.
4. Appropriate storage.
5. Safe furniture arrangement.
6. Suitable work surfaces.
7. Proper waste disposal.
8. Appropriate wall and floor finishes.
9. Easy access to water.
10. Safe positioning of cooking equipment.

D. Dining Room

The dining room is a space used for serving and eating meals.

Considerations:

1. Appropriate dining table.
2. Comfortable dining chairs.
3. Suitable tablecloth.
4. Adequate lighting.
5. Easy-to-clean floor covering.
6. Appropriate flower arrangement.
7. Sufficient space around the table.

8. Attractive wall decorations.

E. Bathroom

The bathroom is a room used for personal hygiene and bathing.

Considerations:

1. Waterproof surfaces.
2. Good ventilation.
3. Non-slip flooring.
4. Appropriate lighting.
5. Proper storage.
6. Easy-to-clean fittings.
7. Suitable colour scheme.
8. Safe electrical installations.

8.0 USE OF COMPUTER SOFTWARE IN INTERIOR DESIGN

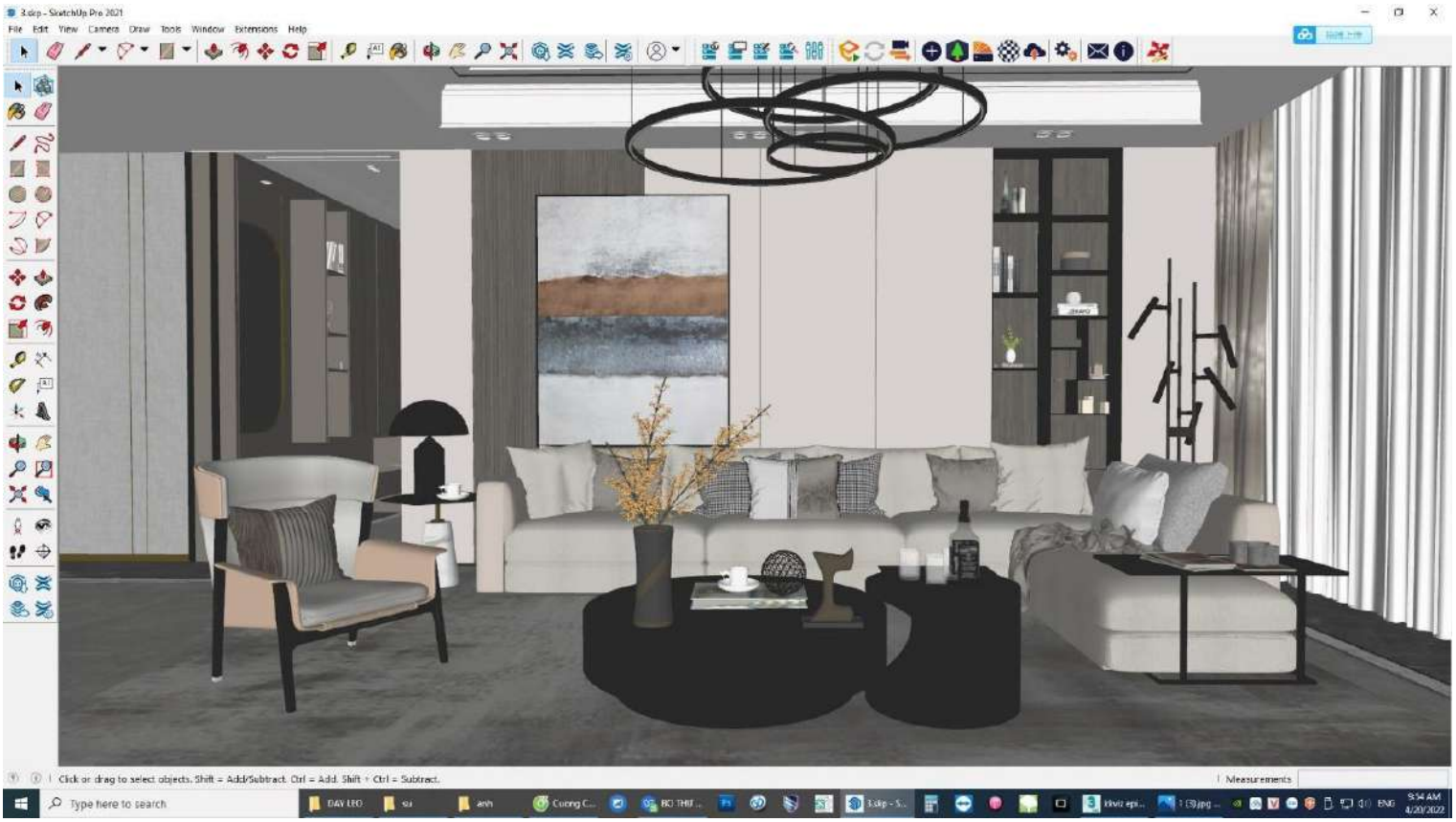
8.1 Meaning of Computer-Aided Interior Design

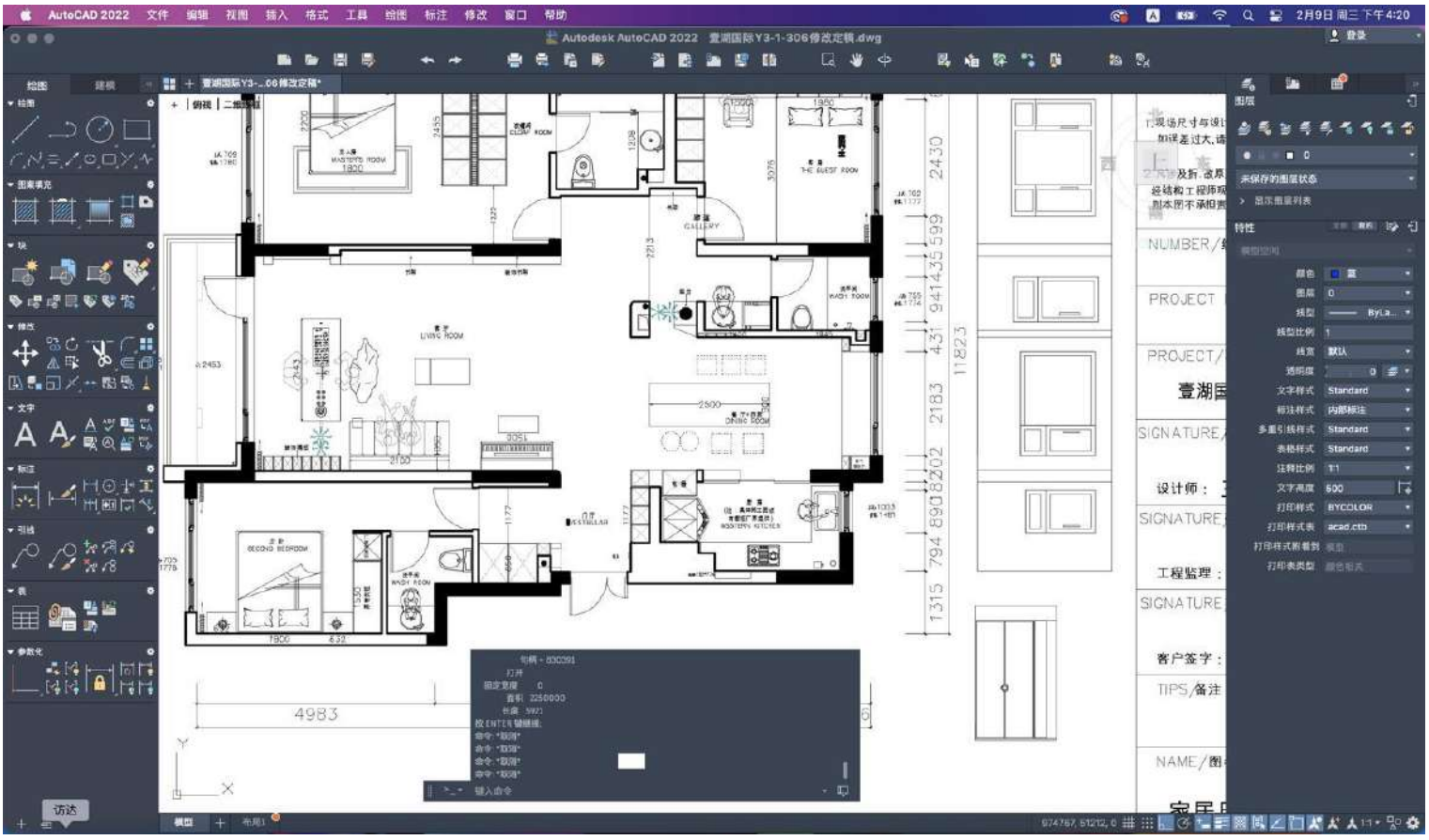
Computer-aided interior design refers to the use of computer applications and digital tools to plan, sketch, organise and visualise the arrangement of furniture, colours, lighting and decorative accessories within an interior space.

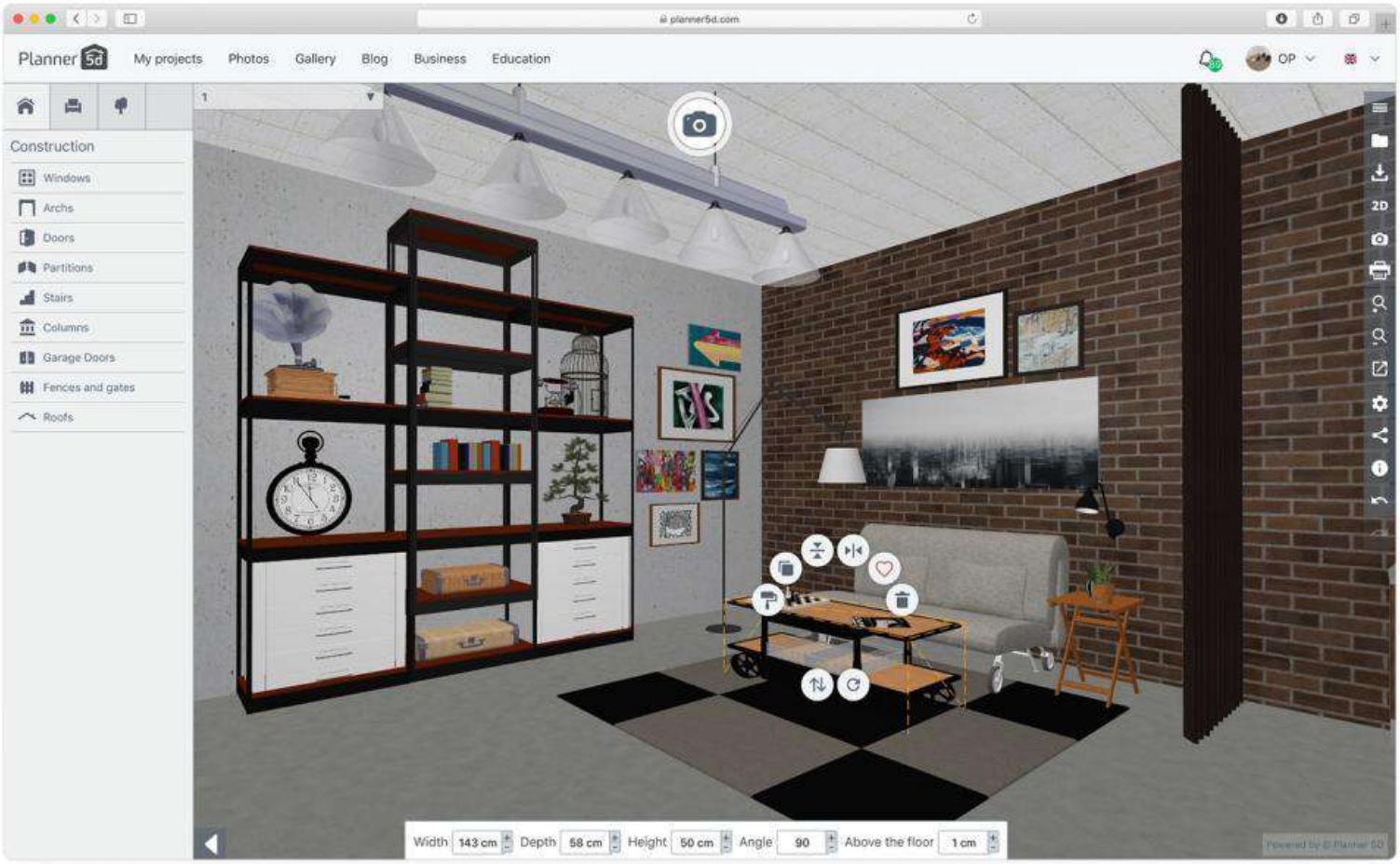
It enables designers to create room layouts before carrying out actual decoration.

8.2 Examples of Digital Tools Used in Interior Design

1. **SketchUp:** Used to create three-dimensional room models and furniture arrangements.
2. **AutoCAD:** Used to prepare accurate floor plans and technical drawings.
3. **Floorplanner:** Used to create room layouts and visualise furniture placement.
4. **Planner 5D:** Used to design rooms in two-dimensional and three-dimensional formats.
5. **Homestyler:** Used to visualise interior decoration and furniture arrangements.
6. **Canva:** Can be used to prepare simple mood boards and colour inspiration boards.


3.skp - SketchUp Pro 2021
File Edit View Camera Draw Tools Window Extensions Help
Click or drag to select objects. Shift = Add/Subtract. Ctrl = Add. Shift + Ctrl = Subtract.
Measurements
Type here to search


AutoCAD 2022
Autodesk AutoCAD 2022 壹湖国际Y3-1-306修改定稿.dwg
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THE GUEST ROOM
GALLERY
4983
NUMBER/
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SIGNATURE/
设计师：
SIGNATURE/
工程监理：
SIGNATURE/
客户签字：
TIPS/备注
NAME/图
家居
模型
布局1



8.3 Uses of Computer Software in Interior Decoration

1. Creating room layouts.
2. Measuring and representing room dimensions.
3. Selecting and testing colour schemes.
4. Arranging furniture digitally.
5. Visualising different lighting arrangements.
6. Creating three-dimensional room models.
7. Comparing alternative designs.
8. Preparing presentations.
9. Estimating materials required.
10. Reducing errors before actual decoration.
11. Saving and modifying designs.
12. Communicating ideas to clients.

8.4 Advantages of Using Computer Software in Interior Design

1. Saves time during planning.
2. Makes visualisation easier.
3. Allows designers to experiment with different designs.
4. Improves accuracy.
5. Reduces unnecessary expenditure.
6. Makes presentation of ideas easier.
7. Allows quick modification of room layouts.
8. Promotes creativity.
9. Supports collaboration.
10. Helps designers identify space-related problems before decorating.

8.5 Limitations of Computer Software in Interior Design

1. Some applications require payment.
2. Requires digital skills.
3. May require reliable internet access.
4. Some applications need powerful computers.
5. Digital designs may not accurately represent actual materials.
6. Software cannot completely replace physical inspection of a room.
7. Incorrect measurements produce inaccurate designs.

8.6 Practical Activity: Designing a Sitting Room Using Computer Software

Requirements

- Computer, tablet or smartphone.
- Interior design software.
- Room measurements.
- Furniture measurements.
- Internet access where required.

Procedure

1. Select a room to be decorated.
2. Measure the room accurately.
3. Open an appropriate interior design application.
4. Create a new room design.
5. Enter the room dimensions.
6. Position doors and windows.

7. Select a suitable floor design.
8. Choose a wall colour.
9. Add furniture such as sofas, tables and cabinets.
10. Add soft furnishings such as curtains and rugs.
11. Include flower arrangements and decorative accessories.
12. Select suitable lighting.
13. Adjust the arrangement to achieve balance and harmony.
14. Save the design.
15. Present the design to classmates for evaluation.

9.0 ENVIRONMENTAL AND SAFETY CONSIDERATIONS IN INTERIOR DECORATION

Interior decoration should promote safety, sustainability and responsible use of resources.

9.1 Environmental Considerations

1. Use locally available materials.
2. Reuse suitable household materials.
3. Recycle waste materials.
4. Select durable furnishings.
5. Avoid unnecessary purchases.
6. Use energy-efficient LED lighting.
7. Select responsibly sourced timber.
8. Reduce the use of materials that cause environmental pollution.
9. Use indoor plants appropriately.
10. Dispose of damaged decorative materials responsibly.

9.2 Safety Considerations

1. Avoid overcrowding rooms.
2. Secure heavy furniture to prevent it from falling.
3. Keep electrical cables organised.
4. Avoid placing flammable materials near naked flames.
5. Use non-slip floor coverings.
6. Avoid sharp-edged decorative accessories.
7. Position flower vases where they cannot easily fall.
8. Use stable furniture.
9. Ensure sufficient lighting along pathways.
10. Keep dangerous tools away from children.

11. Use safe paints and adhesives according to instructions.
12. Avoid blocking emergency exits.

10.0 SUMMARY OF SUB-STRAND 2.5

Interior decoration improves the appearance, comfort, functionality and safety of interior spaces.

The main elements of interior design are:

1. Space.
2. Line.
3. Form.
4. Colour.
5. Texture.
6. Light.
7. Pattern.

The main principles considered when decorating a room include:

1. Balance.
2. Harmony.
3. Contrast.
4. Proportion.

Furnishings are classified into hard and soft furnishings. Flower arrangement is an important decorative technique that introduces natural beauty and colour into interior spaces.

Learners can develop creativity and practical skills by making decorative items using locally available and recycled materials.

Computer software makes it easier to plan, design and visualise interior spaces before actual decoration.

REVISION QUESTIONS

SECTION A: MULTIPLE-CHOICE QUESTIONS

Instructions: Answer all questions. Choose the correct answer from the alternatives A, B, C and D.

1. What is interior decoration?

A. The construction of a building foundation.

B. The process of improving the appearance and functionality of interior spaces.

C. The process of manufacturing household chemicals.

D. The arrangement of outdoor gardens only.

2. Which one of the following is an element of interior design?

A. Food preservation.

B. Space.

C. Food preparation.

D. Laundry management.

3. The area occupied by furniture and other objects in a room is referred to as:

A. Negative space.

B. Empty space.

C. Positive space.

D. Open space.

4. Which type of line makes a room appear taller?

A. Horizontal.

B. Vertical.

C. Curved.

D. Circular.

5. Which one of the following is an example of a geometric form?

A. A natural tree branch.

B. An irregular stone.

C. A circular mirror.

D. A naturally shaped leaf.

6. Which of the following colours are primary colours in the traditional RYB colour system?

A. Green, orange and violet.

B. Red, yellow and blue.

C. Pink, grey and black.

D. Purple, green and brown.

7. Which colour is obtained by mixing red and yellow in equal proportions?

A. Green.

B. Violet.

C. Orange.

D. Blue.

8. Which one of the following is a tertiary colour?

A. Red.

B. Yellow.

C. Blue-green.

D. Green.

9. Which group consists entirely of warm colours?

A. Blue, green and violet.

B. Red, orange and yellow.

C. Blue, white and green.

D. Violet, blue and grey.

10. Which colour scheme uses different tints and shades of one colour?

A. Complementary.

B. Triadic.

C. Monochromatic.

D. Analogous.

11. A colour scheme that uses colours opposite each other on the colour wheel is called:

A. Monochromatic.

B. Complementary.

C. Analogous.

D. Neutral.

12. Which of the following colour combinations is complementary?

A. Blue and orange.

B. Blue and green.

C. Yellow and orange.

D. Red and orange.

13. Which colour scheme uses three colours equally spaced on the traditional colour wheel?

A. Analogous.

B. Monochromatic.

C. Triadic.

D. Neutral.

14. The surface quality of an object is referred to as:

A. Form.

B. Texture.

C. Space.

D. Pattern.

15. Which one of the following is an example of actual texture?

A. A printed picture of rough stone.

B. A wallpaper showing wooden patterns.

C. A rough sisal mat.

D. A photograph of a woollen carpet.

16. Illumination obtained from the sun is called:

A. Artificial lighting.

B. Accent lighting.

C. Task lighting.

D. Natural lighting.

17. Lighting used specifically for reading and sewing is called:

A. General lighting.

B. Task lighting.

C. Accent lighting.

D. Decorative lighting.

18. A repeated arrangement of shapes, lines and colours is called:

A. Texture.

B. Pattern.

C. Form.

D. Space.

19. Arranging identical lamps on either side of a bed demonstrates:

A. Asymmetrical balance.

B. Radial balance.

C. Symmetrical balance.

D. Contrast.

20. The use of different elements to make particular features stand out is referred to as:

A. Harmony.

B. Contrast.

C. Proportion.

D. Symmetry.

21. Which principle ensures that furniture is appropriately sized in relation to the room?

A. Contrast.

B. Pattern.

C. Proportion.

D. Texture.

22. Which of the following is classified as a hard furnishing?

A. Curtain.

B. Cushion.

C. Wardrobe.

D. Tablecloth.

23. Which one of the following is a soft furnishing?

A. Bed frame.

B. Coffee table.

C. Cushion cover.

D. Television stand.

24. Which natural fibre is obtained from the leaves of the sisal plant?

A. Cotton.

B. Wool.

C. Silk.

D. Sisal.

25. Flowers that form the main feature of an arrangement are called:

A. Filler flowers.

B. Focal flowers.

C. Artificial flowers.

D. Line flowers.

26. Which of the following flowers is commonly used as a line flower?

A. Gladiolus.

B. Baby's breath.

C. Small aster.

D. Tiny filler chrysanthemum.

27. Which flower arrangement has a rounded outline?

A. Vertical arrangement.

B. Horizontal arrangement.

C. Round arrangement.

D. Crescent arrangement.

28. Which one of the following is a suitable material for making a decorative vase?

A. Waste glass bottle.

B. Spoilt food.

C. Contaminated water.

D. Rotten timber.

29. Which computer application is commonly used to create three-dimensional interior models?

A. Calculator.

B. SketchUp.

C. Notepad.

D. Media player.

30. Which of the following practices promotes environmental sustainability in interior decoration?

A. Throwing all reusable materials away.

B. Purchasing unnecessary decorative items.

C. Reusing suitable household materials.

D. Burning all household waste.

SECTION B: STRUCTURED QUESTIONS

50 MARKS

Instructions: Answer all questions. Write your answers clearly and observe the marks allocated to each question.

1. (8 marks)

a) Define the term interior decoration. (2 marks)

b) State four importance of interior decoration in a Kenyan household. (4 marks)

c) Identify two rooms in a house where interior decoration is necessary. (2 marks)

2. (8 marks)

a) State four elements of interior design. (4 marks)

b) Differentiate between positive space and negative space in interior decoration. (2 marks)

c) Explain two effects of vertical lines in interior decoration. (2 marks)

3. (8 marks)

a) Name the three primary colours in the traditional colour wheel. (3 marks)

b) State the secondary colour obtained by mixing each of the following pairs:

i) Red and yellow. (1 mark)

ii) Yellow and blue. (1 mark)

iii) Blue and red. (1 mark)

c) State two effects of cool colours in interior decoration. (2 marks)

4. (8 marks)

a) Differentiate between hard furnishings and soft furnishings. (2 marks)

b) Give three examples of hard furnishings used in a sitting room. (3 marks)

c) State three factors to consider when selecting soft furnishings for a bedroom. (3 marks)

5. (9 marks)

a) Define flower arrangement. (2 marks)

b) Identify three categories of flowers used in flower arrangement. (3 marks)

c) Explain four guidelines to observe when preparing a fresh flower arrangement for a dining room. (4 marks)

6. (9 marks)

a) Explain the meaning of each of the following principles of interior design:

i) Balance. (1 mark)

ii) Harmony. (1 mark)

iii) Contrast. (1 mark)

iv) Proportion. (1 mark)

b) State three advantages of using computer software when designing a room. (3 marks)

c) Identify two locally available materials that can be used to make decorative items in a Kenyan household. (2 marks)

ANSWERS AND MARKING SCHEME

Section A: Multiple-Choice Answer Key

Question	Answer	Question	Answer
1	B	16	D
2	B	17	B
3	C	18	B
4	B	19	C
5	C	20	B
6	B	21	C
7	C	22	C
8	C	23	C
9	B	24	D
10	C	25	B
11	B	26	A
12	A	27	C
13	C	28	A
14	B	29	B
15	C	30	C

Section B: Suggested Marking Scheme

1. (8 marks)

a) Interior decoration refers to the art and practice of improving the appearance, comfort and functionality of indoor spaces through the selection and arrangement of colours, furniture, furnishings, lighting and accessories. (2 marks)

b) Importance:

- Improves the appearance of rooms.
- Promotes comfort.

- Improves functionality.
- Creates a welcoming atmosphere.
- Promotes cleanliness and organisation.
- Expresses personal taste.
- Enhances safety.
- Makes efficient use of space.

Award 1 mark for each correct response, any four. (4 marks)

c) Any two:

- Sitting room.
- Bedroom.
- Kitchen.
- Dining room.
- Bathroom.
- Study room.

(2 marks)

2. (8 marks)

a) Any four:

- Space.
- Line.
- Form.
- Colour.
- Texture.
- Light.
- Pattern.

(4 marks)

b)

- Positive space: Area occupied by furniture and other objects in a room. (1 mark)
- Negative space: Empty or unoccupied area surrounding furniture and other objects. (1 mark)

c) Any two:

- Makes ceilings appear higher.
- Creates a feeling of height.
- Produces a formal appearance.
- Creates an impression of strength.

- Makes a room appear taller.

(2 marks)

3. (8 marks)

a)

- Red.
- Yellow.
- Blue.

(3 marks)

b) i) Orange. (1 mark)

ii) Green. (1 mark)

iii) Violet/purple. (1 mark)

c) Any two:

- Create a calm atmosphere.
- Make small rooms appear larger.
- Create a refreshing environment.
- Promote relaxation.
- Make objects appear farther away.

(2 marks)

4. (8 marks)

a)

- Hard furnishings are rigid household items commonly made from wood, metal, glass or plastic. (1 mark)
- Soft furnishings are flexible decorative and functional items mainly made from fabrics and fibres. (1 mark)

b) Any three:

- Sofa.
- Coffee table.
- Television stand.
- Cabinet.
- Shelves.
- Mirror.
- Sideboard.
- Flower stand.

(3 marks)

c) Any three:

- Cost.
- Durability.
- Colour.
- Texture.
- Ease of cleaning.
- Size.
- Purpose.
- Safety.
- Personal preference.

(3 marks)

5. (9 marks)

a) Flower arrangement is the art of selecting, organising and placing flowers and foliage in a container or other suitable support to create an attractive decorative display. (2 marks)

b)

- Focal flowers. (1 mark)
- Filler flowers. (1 mark)
- Line flowers. (1 mark)

c) Any four, explained:

- Select fresh flowers to ensure an attractive and long-lasting arrangement.
- Choose a suitable container that complements the flowers.
- Select colours that match the dining room colour scheme.
- Maintain balance to prevent the arrangement from appearing uneven.
- Vary flower heights to create visual interest.
- Remove damaged leaves and flowers to improve appearance.
- Cut stems diagonally to improve water absorption.
- Use clean water to maintain freshness.
- Avoid overcrowding to ensure flowers are visible.
- Consider the size of the dining table to avoid obstructing diners.

(4 marks)

6. (9 marks)

a)

i) Balance: Appropriate distribution of visual weight in a room. (1 mark)

ii) Harmony: A pleasing relationship between different elements of interior design. (1 mark)

iii) Contrast: Use of different elements to create visual interest and make features stand out. (1 mark)

iv) Proportion: The relationship between the sizes of objects and the overall space. (1 mark)

b) Any three:

- Helps create room layouts.
- Improves accuracy.
- Saves time.
- Allows visualisation of designs.
- Enables testing of colour schemes.
- Helps arrange furniture.
- Allows modification of designs.
- Reduces planning errors.
- Supports three-dimensional modelling.

(3 marks)

c) Any two:

- Sisal.
- Reeds.
- Clay.
- Wood.
- Beads.
- Fabric remnants.
- Waste paper.
- Glass bottles.
- Tin cans.
- Cardboard.
- Coconut shells.
- Dried leaves.

(2 marks)

13.0 SUGGESTED COMPETENCY-BASED PRACTICAL ACTIVITIES

These activities can be undertaken individually or in groups.

Activity	**Expected learner output**
Prepare a colour wheel using locally available materials.	A correctly labelled colour wheel.
Collect samples of different textures.	A texture sample chart.
Identify hard and soft furnishings in a home.	A classification table.
Prepare a flower arrangement.	A completed decorative arrangement.
Make a decorative item using waste materials.	A finished handmade accessory.
Decorate a selected room.	A well-organised and decorated room.
Design a room using computer software.	A digital two-dimensional or three-dimensional room layout.

STRAND 2.0: HOME MANAGEMENT

SUB-STRAND 2.6: BUDGETING

1.0 INTRODUCTION TO BUDGETING

1.1 Meaning of a Budget

A **budget** is a financial plan that shows the estimated income expected to be received and the expenditure expected to be incurred over a given period of time.

A budget helps an individual or household to plan how available money and other financial resources will be obtained, allocated and spent to meet different needs.

In a household, budgeting involves planning how money will be used to cater for essential needs such as:

- Food and groceries.
- Housing and rent.
- Clothing and footwear.
- Education expenses.
- Healthcare and medical expenses.
- Transport.
- Water and electricity bills.
- Communication expenses.
- Savings and investments.
- Recreation and entertainment.
- Emergency expenses.

Example:

A household in Kilgoris receives a monthly income of KSh 45,000. The family prepares a budget showing how the money will be distributed among food, rent, school fees, transport, healthcare, savings and other household requirements.

This enables the family to spend responsibly without exhausting its income before the end of the month.

1.2 Meaning of Household Budgeting

Household budgeting is the process of estimating, planning, allocating and controlling the income and expenditure of a family or household over a specified period.

It involves deciding:

1. How much money the household expects to receive.
2. Where the money will come from.
3. What the household needs to purchase or pay for.
4. How much money should be allocated to each need.
5. How much money should be saved.
6. How to deal with unexpected expenses.

7. How to monitor and evaluate spending.

1.3 Important Terms Used in Budgeting

a) Income

Income refers to money or financial resources received by an individual or household from different sources.

Examples:

- Salaries and wages.
- Business profits.
- Farming activities.
- Rental income.
- Pensions.
- Remittances from relatives.
- Casual employment.
- Income from investments.
- Interest earned from savings.

b) Expenditure

Expenditure refers to the money spent by an individual or household on goods, services and other financial obligations.

Examples:

- Buying food.
- Paying rent.
- Purchasing clothes.
- Paying school fees.
- Buying medicine.
- Paying electricity bills.
- Transport expenses.

c) Savings

Savings refer to the portion of income that is deliberately kept aside for future use instead of being spent immediately.

Examples:

- Money deposited in a bank account.
- Money saved through a SACCO.
- Contributions to a chama.
- Money kept in a regulated mobile savings product.
- Money deposited in a money market fund.

d) Needs

Needs are basic requirements that individuals must have to live a healthy, safe and comfortable life.

Examples:

- Food.
- Shelter.
- Clothing.
- Clean water.
- Healthcare.
- Education.

e) Wants

Wants are things that individuals desire to have but can live without.

Examples:

- Expensive jewellery.
- Designer clothes.
- Luxury phones.
- Expensive entertainment.
- Unnecessary decorations.
- Eating out frequently.

f) Financial resources

These are the money and other financial assets available to an individual or household for meeting its needs and wants.

g) Budget period

This refers to the duration covered by a budget.

Examples:

- Daily budget.
- Weekly budget.
- Monthly budget.
- Quarterly budget.
- Annual budget.

h) Budget deficit

A budget deficit occurs when planned or actual expenditure is greater than the income available.

i) Budget surplus

A budget surplus occurs when income exceeds expenditure, leaving money available for additional savings, investment or other priorities.

j) Financial stability

Financial stability refers to the ability of an individual or household to meet financial obligations consistently, manage unexpected expenses and maintain a reasonable standard of living without excessive financial stress.

1.4 Difference Between Needs and Wants in Household Budgeting

Needs	Wants
Essential for survival and wellbeing.	Not essential for survival.
Usually given priority in a budget.	Considered after essential needs.
Must be provided for regularly.	May be postponed or avoided.
Examples include food and shelter.	Examples include luxury holidays and expensive gadgets.

Important: Some items may be either needs or wants depending on the circumstances of a household.

For example, a smartphone may be necessary for a person who uses it for work, education and communication, while purchasing an expensive replacement phone may be a want.







2.0 IMPORTANCE OF BUDGETING IN A HOUSEHOLD

Budgeting is an important home management activity because it enables families to use their financial resources wisely.

2.1 Importance of Budgeting

1. Promotes proper use of income

- Budgeting helps households allocate money to different needs according to their importance.

- It prevents careless spending.
- It ensures that available income is used productively.
- It helps families avoid wasting money on unnecessary purchases.

2. Helps in meeting basic household needs

- A budget ensures that essential needs such as food, shelter, clothing and healthcare are prioritised.
- It helps parents plan for school fees and other educational expenses.
- It reduces the possibility of neglecting important household responsibilities.

3. Encourages saving

- Budgeting helps households set aside a specific amount of money for future use.
- It encourages a saving culture among family members.
- It helps households prepare for future financial requirements.
- Savings can be used for emergencies, education, investments and retirement.

4. Prevents unnecessary borrowing

- A well-prepared budget helps families live within their financial means.
- It reduces dependence on loans to meet ordinary household expenses.
- It helps prevent excessive borrowing and accumulation of debt.
- It encourages responsible financial decision-making.

5. Promotes financial discipline

- Budgeting encourages individuals to follow a spending plan.
- It discourages impulsive buying.
- It helps family members distinguish between needs and wants.
- It promotes responsible use of money.

6. Helps in preparing for emergencies

- A household budget can include an emergency savings allocation.
- It helps families prepare for unexpected medical bills, accidents, job loss and urgent repairs.
- It reduces financial pressure when unforeseen events occur.

7. Promotes financial security and stability

- Budgeting helps households meet their obligations on time.
- It enables families to plan for both present and future needs.
- It reduces uncertainty about how money will be spent.
- It supports long-term financial security.

8. Helps in achieving household goals

A household can prepare a budget to achieve goals such as:

- Buying a plot of land.
- Building a family house.
- Purchasing household furniture.
- Paying school fees.
- Starting a family business.
- Buying farming equipment.
- Purchasing a vehicle.

9. Promotes accountability among family members

- A household budget makes it easier to monitor how money is used.
- It encourages family members to take responsibility for financial decisions.
- It promotes transparency in the management of household finances.

10. Helps in controlling expenditure

- A budget sets spending limits for different household activities.
- It helps identify unnecessary expenditure.
- It allows the family to compare planned expenditure with actual spending.
- It helps prevent overspending.

11. Promotes cooperation and unity in the family

- Family members can participate in preparing the budget.
- It encourages discussion about household priorities.
- It reduces disagreements caused by irresponsible spending.
- It promotes shared responsibility.

12. Helps in planning for future expenses

- A budget enables households to anticipate expenses such as school fees, insurance premiums and annual rent.
- It allows families to prepare gradually for large purchases.
- It reduces the need for emergency borrowing.

13. Promotes wise purchasing decisions

- Budgeting encourages comparison of prices before buying goods.
- It helps households identify affordable alternatives.
- It reduces wastage and unnecessary purchases.
- It encourages value for money.

14. Encourages investment and wealth creation

- A household can allocate part of its income towards productive investments.
- Investments may generate additional income.

- This can improve the household's future financial position.

2.2 Consequences of Failing to Prepare a Household Budget

Failure to budget may result in:

1. Overspending and misuse of income.
2. Failure to meet essential household needs.
3. Frequent borrowing.
4. Accumulation of debts.
5. Inability to save.
6. Poor financial planning.
7. Family disagreements over money.
8. Failure to pay bills on time.
9. Difficulty handling emergencies.
10. Financial insecurity.
11. Impulsive purchasing.
12. Wastage of household resources.
13. Failure to achieve financial goals.
14. Increased financial stress.

3.0 FACTORS TO CONSIDER WHEN MAKING A HOUSEHOLD BUDGET

A household should consider several factors when preparing a realistic and effective budget.

3.1 Sources and Amount of Income

- The household should identify all available sources of income.
- It should determine the actual amount received from each source.
- Income may come from employment, farming, business, rental property and investments.
- Only reliable and reasonably predictable income should be used when planning regular expenditure.
- Irregular income should be handled cautiously.

Example: A household may receive KSh 30,000 from employment and KSh 10,000 from a small business, giving a total monthly income of KSh 40,000.

3.2 Size of the Household

- The number of people living in a household affects the amount of money required.
- Large households generally require more money for food, clothing, education and healthcare.
- The ages and needs of family members should also be considered.
- Dependants who require special care may increase household expenditure.

3.3 Household Needs and Priorities

- Essential needs should be identified before wants.

- Basic requirements should receive priority.
- The family should consider the urgency and importance of each expenditure.
- Less important purchases should be postponed when income is limited.

3.4 Cost of Living

- The general prices of goods and services affect household expenditure.
- Rising food prices, rent, transport fares and utility bills may increase the cost of living.
- A budget should reflect prevailing prices in the local market.
- Families should review their budgets when prices change.

Kenyan example: A family in Nairobi may spend more on rent and transport than a family living in a rural area of Narok County.

3.5 Location of the Household

- The geographical location influences the cost of goods and services.
- Urban households may incur higher rent, transport and utility expenses.
- Rural households may spend more on farm inputs, transport to distant facilities or water supply depending on local conditions.
- Availability of local resources may reduce some household expenses.

3.6 Number of Income Earners

- A household with several income earners may have more financial resources.
- A household relying on one income earner may need to be more cautious.
- The stability of each income source should be considered.
- The budget should not depend heavily on uncertain earnings.

3.7 Prices of Goods and Services

- The prices of food, fuel, clothing, medicines and other necessities affect expenditure.
- Families should compare prices from different suppliers.
- Seasonal price changes should be considered.
- The budget should be adjusted when prices rise or fall.

3.8 Existing Financial Obligations

These are financial responsibilities that the household must meet.

Examples include:

- Rent.
- Loan repayments.
- School fees.
- Insurance premiums.
- Electricity bills.

- Water bills.
- SACCO contributions.
- Medical bills.

Such obligations should be included when preparing the budget.

3.9 Family Goals and Aspirations

- Families should consider their short-term and long-term goals.
- The budget should provide money for achieving these goals.
- Goals may include buying land, building a house, starting a business or educating children.
- Financial goals should be realistic according to available income.

3.10 Savings and Investments

- A household should determine how much money it can save regularly.
- Savings should be included as a planned budget allocation.
- The family should identify suitable and secure savings options.
- Investment decisions should consider risk, accessibility and expected returns.

3.11 Emergencies and Unexpected Expenses

- A budget should make provision for unforeseen events.
- Examples include illness, accidents, sudden repairs and loss of employment.
- An emergency fund helps prevent disruption of normal household activities.
- The amount allocated should depend on household circumstances.

3.12 Seasonal and Occasional Expenses

Some expenses do not occur every month but should still be planned for.

Examples:

- School opening expenses in January, May and August.
- Christmas celebrations.
- Annual insurance premiums.
- Medical check-ups.
- Home maintenance.
- Agricultural planting seasons.
- Annual rent payments.

3.13 Financial Literacy of Family Members

- The ability of family members to understand financial matters influences budgeting.
- Family members should understand income, expenditure, savings and debt management.
- Financial knowledge promotes better financial decisions.

3.14 Availability of Resources

- Households should consider resources already available.
- Home-grown vegetables, poultry and other farm products may reduce food expenditure.
- Access to safe water or public transport may reduce certain expenses.
- Existing household equipment may reduce the need for new purchases.

3.15 Government Policies and Economic Conditions

- Changes in taxation may affect disposable income.
- Inflation may increase the prices of essential goods.
- Changes in fuel prices may affect transport costs.
- Economic conditions may affect employment and business income.







4.0 TYPES OF HOUSEHOLD BUDGETS

Households prepare different types of budgets depending on the period covered, purpose and financial circumstances.

4.1 Daily Budget

A daily budget is a financial plan showing the income and expenditure expected within one day.

Examples of items included:

- Daily food purchases.
- Transport fares.
- Lunch expenses.
- Small household purchases.
- Daily savings.

Importance of a daily budget

1. Helps control daily spending.
2. Prevents unnecessary purchases.
3. Ensures money is available for essential daily needs.
4. Encourages responsible use of pocket money.

4.2 Weekly Budget

A weekly budget is a financial plan showing the expected income and expenditure over seven days.

It may include:

- Weekly food shopping.
- Transport.
- Household supplies.
- Casual labour payments.

- Entertainment.
- Weekly savings.

Example: A household may allocate KSh 5,000 per week for food and household supplies.

4.3 Monthly Budget

A monthly budget is a financial plan showing the expected income and expenditure over one month.

It is commonly used by households because many salaries, wages, rent payments and utility bills are received or paid monthly.

Items include:

- Salaries and wages.
- Rent.
- Food.
- School expenses.
- Electricity and water.
- Transport.
- Communication.
- Savings.
- Loan repayments.

4.4 Annual Budget

An annual budget is a financial plan showing the estimated income and expenditure of a household over twelve months.

It takes into consideration both regular and occasional expenses.

Examples:

- Annual school expenses.
- Insurance premiums.
- Property maintenance.
- Christmas celebrations.
- Annual land rates where applicable.
- Major household purchases.

Importance of an annual budget

1. Helps families plan for long-term expenses.
2. Promotes proper use of annual income.
3. Helps households prepare for seasonal expenditure.
4. Makes it easier to plan long-term savings.
5. Helps families monitor their financial progress.

4.5 Fixed Budget

A fixed budget is a budget in which the allocated amounts remain unchanged during a particular budget period, unless the budget is formally revised.

It is useful where income and expenses are relatively predictable.

Examples:

- Monthly rent.
- Fixed insurance premiums.
- Agreed school fees.
- Fixed loan instalments.

4.6 Flexible Budget

A flexible budget is a financial plan that can be adjusted when income, prices or household circumstances change.

Examples:

- Increasing the food allocation when prices rise.
- Reducing entertainment expenditure when income decreases.
- Adjusting transport expenses when travelling costs increase.

Importance of a flexible budget

1. Accommodates changing economic conditions.
2. Helps households respond to emergencies.
3. Allows adjustment of spending priorities.
4. Helps households cope with irregular income.

5.0 TYPES OF HOUSEHOLD EXPENDITURE

Household expenditure can be classified according to the nature and frequency of spending.

5.1 Fixed Expenditure

Fixed expenditure refers to expenses that remain relatively constant over a specified period.

Examples:

- Monthly rent.
- Fixed loan repayments.
- Insurance premiums.
- School fees paid according to an agreed schedule.
- Fixed subscriptions.

Characteristics of fixed expenditure

1. It is usually predictable.
2. It is often paid at regular intervals.

3. It is relatively easy to plan for.
4. It may be difficult to change immediately.

5.2 Variable Expenditure

Variable expenditure refers to expenses whose amounts change depending on consumption, prices or household circumstances.

Examples:

- Food.
- Electricity.
- Water.
- Transport.
- Cooking fuel.
- Medical expenses.
- Clothing.

Characteristics

1. The amount may change from month to month.
2. It may be influenced by market prices.
3. It can sometimes be controlled through careful spending.
4. It requires regular monitoring.

5.3 Periodic Expenditure

Periodic expenditure refers to expenses that occur after specific intervals rather than every day or every month.

Examples:

- School fees paid per term.
- Annual insurance premiums.
- Annual vehicle inspection expenses.
- Seasonal agricultural inputs.
- Annual home maintenance.

5.4 Emergency Expenditure

Emergency expenditure refers to unplanned expenses arising from unexpected situations.

Examples:

- Hospitalisation.
- Urgent house repairs.
- Funeral expenses.
- Accidents.
- Emergency travel.

- Sudden replacement of essential equipment.

Note: Households should establish an emergency fund to help meet such expenses without disrupting the entire budget.

6.0 STEPS FOLLOWED WHEN MAKING A HOUSEHOLD BUDGET

Preparing an effective household budget involves a series of organised steps.

Step 1: Determine the Purpose of the Budget

- Establish why the budget is being prepared.
- Identify the household's financial needs and objectives.
- Decide whether the budget is intended for daily, weekly, monthly or annual use.
- Identify the financial goals to be achieved.

Example: A family may prepare a monthly budget to manage salary income and meet household expenses.

Step 2: Identify All Sources of Income

- List all sources of income available to the household.
- Identify regular and irregular sources.
- Determine the amount expected from each source.
- Use realistic figures rather than exaggerated estimates.
- Where income is irregular, use cautious estimates.

Example:

Source of income	**Amount (KSh)**
Salary	30,000
Small business	12,000
Rental income	8,000
Total income	50,000

Step 3: Determine the Total Available Income

- Add the income expected from all sources.
- Use net income when preparing a spending plan based on take-home earnings.
- Net income is the amount remaining after compulsory deductions such as taxes and other deductions from gross earnings.
- Avoid counting the same income twice.

Formula:

Total Income=∑Income from all sources

Example:

30,000+12,000+8,000=KSh 50,000

Step 4: Identify Household Needs and Wants

- List all household requirements.
- Separate essential needs from non-essential wants.
- Give priority to food, shelter, education, healthcare and other basic needs.
- Identify items that can be postponed or avoided.
- Consider the needs of children, older persons and other dependants.

Step 5: Estimate the Cost of Each Item

- Determine the current prices of goods and services.
- Consult shops, supermarkets, local markets and service providers.
- Compare prices from different suppliers.
- Estimate realistic amounts for each expenditure category.
- Consider possible price changes.

Example: The family may estimate that it requires KSh 12,000 per month for food.

Step 6: Prioritise Expenditure

- Arrange expenses according to importance and urgency.
- Provide for essential household requirements first.
- Include compulsory financial obligations.
- Allocate money for savings and emergency preparation.
- Reduce unnecessary expenditure.

Step 7: Allocate Income to Different Expenditure Items

- Assign a specific amount of money to each expenditure category.
- Ensure that allocations are within the available income.
- Avoid allocating more money than the household can afford.
- Ensure that savings are deliberately included.

Step 8: Prepare the Budget in a Suitable Format

- Organise the budget in a table.
- Include income, expenditure and savings.
- Indicate the estimated amount for each item.
- Calculate the totals accurately.

- Identify any expected surplus or deficit.

Step 9: Check the Budget

- Add all income allocations.
- Calculate total expenditure.
- Compare expenditure with total income.
- Ensure that the budget is realistic.
- Adjust the amounts if expenditure exceeds income.

Step 10: Implement the Budget

- Use the budget as a guide when spending money.
- Purchase essential items according to the allocated amounts.
- Avoid unnecessary borrowing.
- Keep receipts and payment records.
- Involve relevant family members in following the budget.

Step 11: Monitor and Evaluate the Budget

- Compare actual expenditure with planned expenditure.
- Identify areas where overspending has occurred.
- Determine whether household goals are being achieved.
- Identify areas where savings can be increased.
- Assess whether the budget remains suitable.

Step 12: Review and Revise the Budget

- Adjust the budget when income changes.
- Revise expenditure when market prices increase.
- Consider changes in family size and household needs.
- Include new financial obligations.
- Improve the budget based on previous experience.

7.0 COMPONENTS OF A HOUSEHOLD BUDGET

A household budget generally consists of three main components:



7.1 Income

This shows the money expected to be received by the household during the budget period.

Examples:

- Employment income.
- Business income.
- Agricultural income.
- Rental income.
- Pensions.
- Other reliable income.

7.2 Expenditure

This shows how the household intends to spend its income.

Common categories include:

a) Food expenditure

- Cereals such as maize flour and rice.
- Vegetables.
- Fruits.

- Meat, fish and eggs.
- Milk and other dairy products.
- Cooking oil and other ingredients.

b) Housing expenditure

- Rent.
- House repairs.
- Water.
- Electricity.
- Waste collection.
- Security expenses.

c) Clothing expenditure

- School uniforms.
- Everyday clothing.
- Footwear.
- Laundry supplies.

d) Education expenditure

- School fees.
- Learning materials.
- Stationery.
- School transport.
- Examination-related expenses where applicable.

e) Healthcare expenditure

- Medical consultations.
- Prescribed medicines.
- Health insurance contributions.
- Preventive healthcare.
- Emergency medical expenses.

f) Transport expenditure

- Public transport.
- Fuel.
- Vehicle maintenance.
- Bicycle or motorcycle maintenance.
- Travel expenses.

g) Communication expenditure

- Mobile phone airtime.
- Internet bundles.
- Communication subscriptions.

h) Savings and investment

- Bank savings.
- SACCO contributions.
- Chama contributions.
- Investment contributions.
- Emergency savings.

i) Recreation and entertainment

- Family outings.
- Sports activities.
- Occasional entertainment.
- Cultural and social activities.

7.3 Savings

Savings should be deliberately included in the budget rather than treated as money left over after spending.

A household can save towards:

- Children's education.
- Buying land.
- Building a house.
- Starting a business.
- Retirement.
- Emergency needs.
- Purchasing household equipment.

8.0 SAMPLE HOUSEHOLD BUDGETS

8.1 Sample Monthly Household Budget for a Family in Kilgoris, Narok County

The following is an illustrative budget for a household of four people. The amounts are hypothetical and should be adjusted according to actual income, market prices and household circumstances.

Total monthly net income: KSh 60,000

Income source	Amount (KSh)
Salary	40,000
Small business income	12,000

Farming income	8,000
Total income	60,000

Monthly expenditure budget

Expenditure item	Amount (KSh)
Food and groceries	14,000
Rent	8,000
Education	7,000
Transport	5,000
Electricity and water	3,000
Healthcare	2,500
Clothing	2,000
Communication	1,500
Household supplies	2,000
Recreation	1,500
Loan repayment	3,000
Emergency savings	3,000
Long-term savings	5,500
Total expenditure and savings	58,000
Unallocated balance	2,000

Interpretation of the budget

1. The household receives a total monthly income of KSh 60,000.
2. It plans to spend and save KSh 58,000.
3. KSh 5,500 is allocated towards long-term savings.
4. KSh 3,000 is allocated towards emergency savings.
5. The remaining KSh 2,000 is available for additional savings or adjustment of household priorities.
6. The budget shows that the household is planning to spend within its available income.

8.2 Sample Monthly Budget for a Household With an Irregular Income

Some Kenyan households depend on casual employment, small-scale farming, seasonal businesses and other irregular sources of income.

Such households should prepare conservative budgets based on the income they can reasonably expect.

Example: A household estimates that it will receive KSh 30,000 during a particular month.

Expenditure item	Amount (KSh)
Food	9,000
Housing	4,000
Education	4,000
Transport	2,500
Healthcare	1,500
Water and electricity	1,500
Communication	500
Household supplies	1,000
Savings	3,000

Emergency provision	2,000
Other essential expenses	1,000
Total	30,000

Lessons from the budget

- Irregular income requires careful planning.
- Essential needs should receive priority.
- Households should avoid making large financial commitments based on uncertain income.
- Savings should be built during periods of higher income.
- Expenditure should be adjusted when income decreases.

9.0 BUDGET CALCULATIONS

9.1 Calculating Total Income

Total income is obtained by adding all sources of income.

Total Income=Income 1+Income 2+⋯Total Income=Income 1+Income 2+⋯

Example:

Salary = KSh 35,000

Business income = KSh 10,000

Rental income = KSh 5,000

35,000+10,000+5,000=50,00035,000+10,000+5,000=50,000

Total income = KSh 50,000.

9.2 Calculating Total Expenditure

Total expenditure is obtained by adding all expenditure items.

Total Expenditure=∑All Expenditure ItemsTotal Expenditure=∑All Expenditure Items

9.3 Calculating Budget Surplus

A budget surplus occurs when income is greater than expenditure.

Surplus=Total Income−Total ExpenditureSurplus=Total Income−Total Expenditure

Example:

Income = KSh 50,000

Expenditure = KSh 45,000

50,000−45,000=5,000

Budget surplus = KSh 5,000.

9.4 Calculating Budget Deficit

A budget deficit occurs when expenditure is greater than income.

Deficit=Total Expenditure−Total IncomeDeficit=Total Expenditure−Total Income

Example:

Income = KSh 40,000

Expenditure = KSh 47,000

47,000−40,000=7,000

Budget deficit = KSh 7,000.

9.5 Calculating the Percentage of Income Allocated to an Item

This calculation helps households determine the proportion of income allocated to a particular expenditure item.

Percentage=Amount AllocatedTotal Income×100Percentage=Total IncomeAmount Allocated×100

Example:

A household earns KSh 50,000 and allocates KSh 10,000 to food.

$$\frac{10,000}{50,000} \times 100 = 20\%$$

Therefore, 20% of the household's income is allocated to food.

10.0 PRINCIPLES OF EFFECTIVE HOUSEHOLD BUDGETING

For a household budget to be effective, it should follow the following principles.

1. **Realism:** The budget should be based on actual and reasonably expected income and expenditure.
2. **Accuracy:** Figures should be calculated correctly.
3. **Flexibility:** The budget should allow adjustments when circumstances change.
4. **Prioritisation:** Essential needs should receive priority.
5. **Simplicity:** The budget should be easy to understand and follow.
6. **Comprehensiveness:** All important sources of income and expenditure should be included.
7. **Economy:** Household resources should be used efficiently.
8. **Consistency:** Family members should follow the budget throughout the budget period.
9. **Participation:** Relevant household members should participate in preparing and implementing the budget.
10. **Regular review:** The budget should be checked and revised when necessary.
11. **Savings orientation:** The budget should provide for future financial needs.
12. **Accountability:** Spending should be monitored and properly recorded.

11.0 METHODS OF KEEPING HOUSEHOLD BUDGET RECORDS

Budget records help households monitor their financial activities.

11.1 Written Records

- Income and expenditure are recorded in an exercise book or household budget book.
- Receipts and payment records can be attached.
- The method is inexpensive and easy to use.

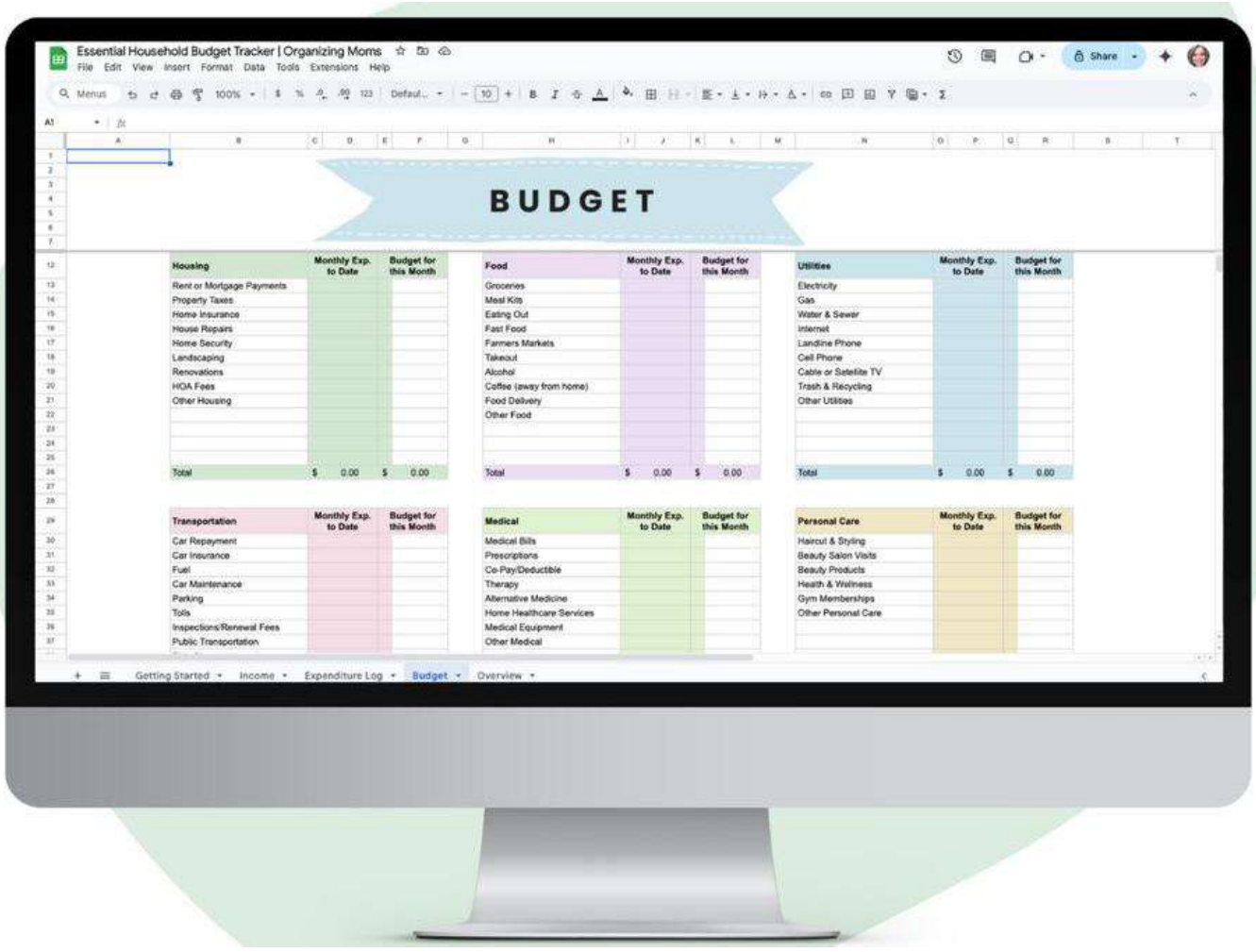
- It is suitable for households without access to digital devices.

11.2 Spreadsheet Applications

Examples include Microsoft Excel and Google Sheets.







Advantages

1. They perform calculations automatically.
2. They make it easy to organise financial information.

3. They allow comparison of expenditure across different months.
4. They can generate charts and graphs.
5. They make it easier to update financial records.

11.3 Mobile Applications

Some mobile applications and digital banking services help users track expenditure and savings.

Examples of digital financial tools used in Kenya include:

- Mobile money transaction records.
- Mobile banking applications.
- Bank account applications.
- Digital spreadsheets.
- Financial management applications.

Advantages

1. They allow convenient recording of transactions.
2. They help users monitor their spending.
3. They can provide transaction notifications.
4. They may support savings goals.
5. They allow users to access financial records conveniently.

Precautions when using digital budgeting tools

- Protect passwords and PINs.
- Avoid sharing mobile banking credentials.
- Use secure devices and trusted applications.
- Verify transactions before confirming payments.
- Avoid accessing financial accounts through suspicious links.
- Keep financial information private.

11.4 Receipts and Bank Statements

- Receipts provide evidence of purchases and payments.
- Bank statements show deposits, withdrawals and other account transactions.
- They help households verify actual expenditure.
- They support accountability and financial monitoring.

12.0 MONITORING AND EVALUATING A HOUSEHOLD BUDGET

Monitoring refers to regularly checking how the household is implementing its budget.

Evaluation involves assessing whether the budget has achieved its intended financial objectives.

12.1 Importance of Monitoring and Evaluating a Budget

1. Helps identify overspending.
2. Shows whether the household is following its financial plan.
3. Identifies unnecessary expenditure.
4. Helps determine whether savings targets are being achieved.
5. Identifies areas that require improvement.
6. Helps households respond to changes in income.
7. Promotes accountability.
8. Supports future financial planning.

12.2 Methods of Monitoring Household Expenditure

- Keeping receipts.
- Recording daily expenditure.
- Checking bank statements.
- Reviewing mobile money transaction records.
- Comparing planned and actual expenditure.
- Checking household savings.
- Holding family financial discussions.

12.3 Reasons for Reviewing a Household Budget

- Changes in income.
- Increase in the cost of living.
- Change in household size.
- Birth of a child.
- School admission or transition.
- Loss of employment.
- Unexpected medical expenses.
- Relocation.
- Acquisition of new assets.
- Changes in financial goals.

13.0 WAYS OF IMPROVING HOUSEHOLD BUDGETING

1. Prepare a written budget before spending.
2. Prioritise essential household needs.
3. Compare prices before purchasing goods.
4. Prepare a shopping list.

5. Avoid impulse buying.
6. Buy goods in appropriate quantities to minimise wastage.
7. Prepare meals at home where practical.
8. Grow vegetables and keep suitable livestock where resources permit.
9. Use electricity and water economically.
10. Reduce unnecessary transport costs.
11. Save regularly.
12. Avoid unnecessary borrowing.
13. Pay financial obligations on time.
14. Keep accurate financial records.
15. Review the budget regularly.
16. Involve family members in financial planning.
17. Seek reliable financial advice when necessary.
18. Use digital tools responsibly to monitor spending.

14.0 CHALLENGES EXPERIENCED WHEN PREPARING AND IMPLEMENTING HOUSEHOLD BUDGETS

1. Low household income

- Some households do not earn enough to meet all their needs.
- This makes it difficult to allocate money to all expenditure items.

2. Irregular income

- Casual workers and small-scale traders may not receive the same amount of money every month.
- This makes financial planning difficult.

3. Rising cost of living

- Increasing prices of food, fuel, rent and other essentials may make the budget inadequate.

4. Emergencies

- Unexpected illnesses, accidents and home repairs may disrupt planned expenditure.

5. Impulse buying

- Unplanned purchases may cause households to exceed their spending limits.

6. Lack of financial knowledge

- Some household members may not know how to prepare and manage budgets.

7. Family disagreements

- Family members may have different financial priorities.
- This may make it difficult to agree on expenditure allocations.

8. Poor record keeping

- Failure to record expenditure makes it difficult to monitor actual spending.

9. Debts and financial obligations

- Existing loans and repayments may reduce the income available for other needs.

10. Unpredictable economic conditions

- Inflation, changes in employment and fluctuating business income may affect the accuracy of the budget.

15.0 WAYS OF OVERCOMING HOUSEHOLD BUDGETING CHALLENGES

1. Develop additional reliable sources of income.
2. Prepare flexible budgets.
3. Prioritise basic needs.
4. Establish an emergency fund.
5. Improve financial literacy.
6. Maintain accurate financial records.
7. Encourage family participation in budgeting.
8. Avoid unnecessary borrowing.
9. Compare prices before making purchases.
10. Reduce wastage of food and other household resources.
11. Review the budget regularly.
12. Set realistic savings targets.
13. Seek professional financial guidance where necessary.
14. Use digital budgeting tools securely.

16.0 THE ROLE OF FAMILY MEMBERS IN HOUSEHOLD BUDGETING

Effective household budgeting requires cooperation among family members.

16.1 Role of Parents and Guardians

- Identify household sources of income.
- Establish family financial priorities.
- Prepare and implement the household budget.
- Provide for children's basic needs.
- Encourage saving.
- Monitor expenditure.
- Teach children responsible money management.

16.2 Role of Children and Other Dependants

- Use pocket money responsibly.

- Avoid unnecessary purchases.
- Take care of household property.
- Avoid wastage of food, water and electricity.
- Participate in age-appropriate household financial discussions.
- Develop a saving culture.

16.3 Role of All Family Members

- Cooperate in identifying household needs.
- Respect agreed spending limits.
- Avoid unnecessary expenditure.
- Support family savings goals.
- Share responsibility for conserving resources.
- Communicate openly about financial challenges.

17.0 IMPORTANCE OF BUDGETING IN PROMOTING FINANCIAL STABILITY

Budgeting empowers individuals and households to achieve financial stability in several ways.

1. **Income management:** Helps households use available income appropriately.
2. **Debt control:** Reduces unnecessary borrowing and helps manage existing debts.
3. **Emergency preparedness:** Encourages the establishment of emergency savings.
4. **Future planning:** Supports long-term financial goals.
5. **Financial independence:** Reduces dependence on other people for ordinary household needs.
6. **Investment:** Creates opportunities to allocate money towards productive investments.
7. **Responsible spending:** Encourages careful purchasing decisions.
8. **Financial confidence:** Helps family members understand their financial position.
9. **Improved living standards:** Supports consistent provision of essential needs.
10. **Intergenerational financial responsibility:** Enables parents and guardians to teach children good financial habits.

18.0 PRACTICAL LEARNING ACTIVITIES

Activity 1: Preparing a Household Budget

Instructions:

1. Work in groups.
2. Assume that a household receives KSh 50,000 per month.
3. Identify at least ten household expenditure items.
4. Allocate the income to the different items.
5. Include savings and emergency provision.
6. Calculate total expenditure.

7. Determine whether the budget has a surplus or deficit.
8. Present your budget to the class.

Expected learning outcome: The learner demonstrates the ability to prepare and interpret a household budget.

Activity 2: Household Price Survey

1. Visit a local market or shop with guidance from the teacher.
2. Identify common household commodities.
3. Record their prices.
4. Compare prices from different sellers.
5. Discuss how prices influence household budgeting.
6. Present the findings.

Possible commodities:

- Maize flour.
- Rice.
- Cooking oil.
- Sugar.
- Beans.
- Vegetables.
- Soap.
- Milk.
- Bread.
- Cooking fuel.

Activity 3: Interviewing a Resource Person

Invite a parent, financial literacy educator, SACCO representative or household financial adviser.

Ask questions about:

- Importance of budgeting.
- Sources of household income.
- Factors considered when preparing budgets.
- Methods of controlling expenditure.
- Importance of savings.
- Challenges experienced in household budgeting.

Activity 4: Digital Household Budgeting

Using a computer or smartphone:

1. Open a spreadsheet application.

2. Create columns for income, expenditure and savings.
3. Enter sample household financial information.
4. Use simple formulas to calculate totals.
5. Calculate the budget surplus or deficit.
6. Present the completed budget.

Activity 5: Reflection

Learners discuss:

- Why should a household prepare a budget?
- What happens when expenditure exceeds income?
- How can budgeting promote financial stability?
- Why should household members participate in budgeting?

TOPICAL REVISION QUESTIONS

GRADE 11 HOME SCIENCE

Strand: 2.0 Home Management

Sub-strand: 2.6 Budgeting

SECTION A: MULTIPLE CHOICE QUESTIONS (30 MARKS)

Choose the correct answer from the alternatives A, B, C and D.

1. What is the most appropriate definition of a household budget?

A. A record of all goods purchased by a family.

B. A financial plan showing expected income and expenditure over a given period.

C. A list of debts owed by household members.

D. A document showing the assets owned by a family.

2. Which of the following best explains the importance of household budgeting?

A. It encourages unnecessary spending.

B. It eliminates all household expenses.

C. It promotes proper utilisation of available financial resources.

D. It ensures that all family members receive equal amounts of money.

3. A household receives money from salaries, farming and business activities. These resources are collectively referred to as:

A. Expenditure.

B. Income.

C. Savings.

D. Debts.

4. Which of the following is an example of a household need?

A. Designer sunglasses.

B. Expensive jewellery.

C. Basic food supplies.

D. Luxury entertainment.

5. A household earns KSh 60,000 monthly and spends KSh 52,000. What is the financial position of the household?

A. Budget deficit of KSh 8,000.

B. Budget surplus of KSh 8,000.

C. Budget deficit of KSh 112,000.

D. Balanced budget.

6. Which factor should receive priority when preparing a household budget?

A. Personal interests of the income earner.

B. Essential household needs.

C. Luxury purchases.

D. Entertainment activities.

7. Which of the following is an example of fixed household expenditure?

A. Monthly rent.

B. Vegetables.

C. Electricity consumption.

D. Transport fares.

8. A budget that can be adjusted when household income or expenditure changes is known as:

A. Fixed budget.

B. Annual budget.

C. Flexible budget.

D. Daily budget.

9. Which of the following is the most appropriate reason for including savings in a household budget?

A. To encourage unnecessary purchases.

B. To prepare for future financial requirements.

C. To increase household expenditure.

D. To avoid keeping financial records.

10. A household receives KSh 45,000 and spends KSh 50,000. What is the resulting budget deficit?

A. KSh 3,000.

B. KSh 5,000.

C. KSh 45,000.

D. KSh 95,000.

11. Which of the following is a periodic household expenditure?

A. Daily food purchases.

B. Monthly rent.

C. Annual insurance premium.

D. Daily transport fare.

12. Why should household members distinguish between needs and wants when budgeting?

A. To increase the number of household purchases.

B. To ensure essential requirements are prioritised.

C. To eliminate all recreational activities.

D. To encourage excessive borrowing.

13. Which of the following sources of income is likely to be irregular?

A. A fixed monthly salary.

B. A regular pension.

C. Casual employment.

D. A fixed monthly rental payment.

14. Which document provides evidence of goods purchased and payments made?

A. Shopping advertisement.

B. Receipt.

C. Shopping list.

D. Budget proposal.

15. Which of the following is a suitable method of monitoring household expenditure?

A. Ignoring financial transactions.

B. Keeping receipts and recording expenses.

C. Purchasing goods without planning.

D. Spending all available income.

16. Which of the following is an example of emergency expenditure?

A. Monthly internet subscription.

B. Regular food shopping.

C. Urgent medical treatment following an accident.

D. Planned monthly rent payment.

17. What should a household do when expenditure consistently exceeds income?

A. Increase unnecessary purchases.

B. Ignore the deficit.

C. Review expenditure and adjust spending priorities.

D. Borrow money without considering repayment.

18. Which of the following is a benefit of involving family members in household budgeting?

A. It increases disagreements.

B. It promotes cooperation and shared responsibility.

C. It encourages irresponsible spending.

D. It reduces financial accountability.

19. A family earns KSh 50,000 monthly and allocates KSh 10,000 to food. What percentage of income is allocated to food?

A. 10%.

B. 15%.

C. 20%.

D. 25%.

20. Which of the following should be done first when preparing a household budget?

A. Purchasing household commodities.

B. Determining the purpose of the budget.

C. Calculating the budget surplus.

D. Paying for entertainment.

21. Which of the following is a major advantage of using spreadsheet applications for household budgeting?

A. They eliminate the need for financial planning.

B. They automatically increase household income.

C. They facilitate calculations and organisation of financial records.

D. They prevent all financial emergencies.

22. Which of the following economic factors may affect household budgeting?

A. Inflation.

B. Family traditions only.

C. Personal hobbies.

D. Household decorations.

23. Why should a household establish an emergency fund?

A. To finance luxury purchases.

B. To meet unexpected financial obligations.

C. To increase unnecessary expenditure.

D. To avoid preparing a budget.

24. Which of the following is an appropriate way of reducing household expenditure?

A. Purchasing goods without comparing prices.

B. Wasting food and water.

C. Preparing shopping lists before purchasing commodities.

D. Buying unnecessary household equipment.

25. What is the main purpose of evaluating a household budget?

A. To identify financial performance and areas requiring improvement.

B. To increase the number of household expenses.

C. To avoid keeping financial records.

D. To eliminate household savings.

26. A family receives KSh 70,000 monthly. Its total expenditure is KSh 63,000. How much remains unspent?

A. KSh 5,000.

B. KSh 6,000.

C. KSh 7,000.

D. KSh 8,000.

27. Which of the following is an example of a variable household expense?

A. Fixed monthly rent.

B. Fixed loan instalment.

C. Monthly food expenditure.

D. Fixed insurance premium.

28. A household depends on seasonal farming income. Which budgeting approach would be most suitable?

A. Preparing a budget based on guaranteed high income.

B. Ignoring future expenses.

C. Preparing a flexible budget based on realistic income estimates.

D. Spending all income immediately after harvesting.

29. Which of the following best promotes financial discipline among household members?

A. Impulse buying.

B. Following agreed spending limits.

C. Ignoring financial obligations.

D. Borrowing for unnecessary purchases.

30. How does effective household budgeting empower individuals to achieve financial stability?

A. By encouraging excessive consumption.

B. By eliminating the need to save.

C. By promoting responsible spending, savings and financial planning.

D. By increasing dependence on loans.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer all questions.

1. Introduction to Household Budgeting (8 marks)

a) Define the term household budgeting. (2 marks)

b) Differentiate between the following terms as used in household budgeting:

i) Income and expenditure. (2 marks)

ii) Needs and wants. (2 marks)

c) State two examples of sources of household income in Kenya. (2 marks)

2. Importance of Budgeting (8 marks)

a) Explain four ways in which budgeting promotes effective management of household resources. (4 marks)

b) Explain four consequences of failing to prepare a household budget. (4 marks)

3. Factors Considered When Preparing a Household Budget (8 marks)

a) Explain six factors that should be considered when preparing a household budget. (6 marks)

b) State two reasons why household needs should be prioritised over wants when preparing a budget. (2 marks)

4. Steps in Preparing a Household Budget (8 marks)

a) Outline six steps followed when preparing an effective household budget. (6 marks)

b) Explain why a household should review its budget regularly. (2 marks)

5. Practical Household Budgeting (9 marks)

A family living in Narok County receives a monthly net income of KSh 55,000 from different sources. The family plans to spend its income as follows:

Expenditure item	**Amount (KSh)**
Food	13,000
Rent	8,000
Education	7,000
Transport	5,000
Healthcare	2,000
Water and electricity	2,500
Clothing	2,500
Communication	1,000
Household supplies	2,000
Recreation	1,500
Loan repayment	3,000
Savings	4,000

Answer the following questions.

a) Calculate the total planned expenditure. (2 marks)

b) Determine whether the family has a budget surplus or deficit. Show your working. (2 marks)

c) Calculate the percentage of income allocated to food. (2 marks)

d) State three ways in which the family can improve its household budget. (3 marks)

6. Budget Implementation and Financial Stability (9 marks)

a) Explain four methods that can be used to monitor household expenditure. (4 marks)

b) Explain three challenges that households may experience when implementing their budgets. (3 marks)

c) State two ways in which effective budgeting promotes financial stability. (2 marks)

ANSWER KEY AND MARKING SCHEME

Section A: Multiple Choice Answers

Question	Answer	Question	Answer
1	B	16	C
2	C	17	C
3	B	18	B
4	C	19	C
5	B	20	B
6	B	21	C
7	A	22	A
8	C	23	B
9	B	24	C
10	B	25	A
11	C	26	C
12	B	27	C
13	C	28	C
14	B	29	B
15	B	30	C

30 marks

Section B: Suggested Marking Scheme

1. Introduction to Household Budgeting (8 marks)

a) Household budgeting:

- The process of planning, estimating and allocating household income to different expenditure items over a specified period. (2 marks)

b)

i) Income and expenditure:

- Income is money received by a household from various sources. (1 mark)
- Expenditure is money spent by a household on goods and services. (1 mark)

ii) Needs and wants:

- Needs are essential requirements necessary for survival and wellbeing. (1 mark)
- Wants are non-essential things that individuals desire to have. (1 mark)

c) Any two:

- Salaries and wages.
- Farming activities.
- Business profits.
- Rental income.
- Pensions.
- Remittances.
- Casual employment.

- Investment returns.

(1 × 2 = 2 marks)

2. Importance of Budgeting (8 marks)

a) Any four well-explained points:

1. Promotes proper utilisation of income by allocating money to important household requirements.
2. Encourages savings by providing for future financial needs.
3. Controls expenditure by setting limits on how much should be spent.
4. Prevents unnecessary borrowing by encouraging households to live within their means.
5. Promotes financial discipline by discouraging impulse buying.
6. Helps households prepare for emergencies through emergency savings.
7. Facilitates achievement of financial goals such as buying land or building a house.
8. Promotes family cooperation through shared financial planning.
9. Ensures timely payment of bills and other financial obligations.
10. Helps maintain financial stability by balancing income and expenditure.

(1 × 4 = 4 marks)

b) Any four:

1. Overspending and misuse of money.
2. Frequent borrowing and accumulation of debts.
3. Failure to meet essential household needs.
4. Inability to save for future requirements.
5. Family disagreements over financial matters.
6. Difficulty handling unexpected expenses.
7. Failure to pay bills on time.
8. Financial insecurity and stress.
9. Failure to achieve household goals.
10. Wastage of resources.

(1 × 4 = 4 marks)

3. Factors Considered When Preparing a Household Budget (8 marks)

a) Any six explained points:

1. **Household income:** The amount of money available determines the expenditure that can be accommodated.
2. **Family size:** The number of household members influences expenditure on food, clothing, education and healthcare.
3. **Household needs:** Essential needs must be identified and prioritised when allocating income.

4. **Cost of living:** Prevailing prices of goods and services influence the amount allocated to expenditure.
5. **Location:** Urban and rural households may experience different living costs.
6. **Number of income earners:** The number of people contributing income affects household financial resources.
7. **Existing financial obligations:** Loans, rent and other commitments must be considered.
8. **Savings objectives:** Money should be allocated towards future financial goals.
9. **Emergencies:** Provision should be made for unexpected financial requirements.
10. **Seasonal expenses:** Expenses such as school fees and annual insurance premiums should be considered.
11. **Availability of resources:** Existing household resources may reduce expenditure.
12. **Economic conditions:** Inflation and changes in employment may influence income and expenditure.

(1 × 6 = 6 marks)

b) Any two:

- Essential needs are necessary for survival and wellbeing.
- Prioritising needs ensures that basic household requirements are met before spending on non-essential items.
- It prevents wastage of limited financial resources.
- It reduces unnecessary borrowing.
- It promotes responsible financial decisions.

(1 × 2 = 2 marks)

4. Steps in Preparing a Household Budget (8 marks)

a) Any six:

1. Determine the purpose of the budget.
2. Identify all sources of household income.
3. Calculate the total available income.
4. Identify household needs and wants.
5. Estimate the cost of different household requirements.
6. Prioritise expenditure according to importance.
7. Allocate income to different expenditure items.
8. Prepare the budget in a suitable format.
9. Check and calculate the totals.
10. Implement the budget.
11. Monitor and evaluate expenditure.
12. Review and revise the budget when necessary.

(1 × 6 = 6 marks)

b) Any two explained points:

- To accommodate changes in household income and expenditure.
- To respond to changes in market prices and cost of living.
- To correct overspending and improve financial management.
- To accommodate new household needs and financial obligations.
- To assess progress towards financial goals.

(1 × 2 = 2 marks)

5. Practical Household Budgeting (9 marks)

a) Total planned expenditure:

13,000+8,000+7,000+5,000+2,000+2,500

+2,500+1,000+2,000+1,500+3,000+4,000

=KSh 51,500

2 marks

b) Budget position:

Surplus=Income−ExpenditureSurplus=Income−Expenditure

55,000−51,500=KSh 3,500

The household has a budget surplus of KSh 3,500. (2 marks)

c) Percentage allocated to food:

13,000/55,000×100

=23.64%=

Approximately 23.64%. (2 marks)

d) Any three:

1. Compare prices before purchasing household commodities.
2. Reduce unnecessary expenditure on recreation.
3. Increase savings using part of the surplus.
4. Avoid impulse buying.
5. Maintain accurate expenditure records.
6. Reduce food wastage.
7. Monitor utility consumption.
8. Review expenditure regularly.
9. Plan purchases using a shopping list.

(1 × 3 = 3 marks)

6. Budget Implementation and Financial Stability (9 marks)

a) Any four explained points:

1. **Keeping receipts:** Receipts provide evidence of purchases and payments made.
2. **Recording expenditure:** Daily records help households identify how money is spent.
3. **Checking bank statements:** Bank statements help verify deposits, withdrawals and payments.
4. **Monitoring mobile money transactions:** Transaction records help track financial activities.
5. **Comparing actual and planned expenditure:** This helps identify areas of overspending.
6. **Reviewing savings:** Checking savings records helps determine whether financial targets are being achieved.
7. **Family financial meetings:** Discussions help assess budget implementation and agree on improvements.

(1 × 4 = 4 marks)

b) Any three explained points:

1. **Low income:** Insufficient income makes it difficult to meet all household needs.
2. **Irregular income:** Unpredictable earnings make it difficult to plan expenditure.
3. **Inflation:** Rising prices may make the original budget inadequate.
4. **Emergencies:** Unexpected expenses may disrupt planned expenditure.
5. **Impulse buying:** Unplanned purchases cause overspending.
6. **Lack of financial knowledge:** Some household members may not know how to manage budgets.
7. **Family disagreements:** Different spending priorities may make implementation difficult.
8. **Poor record keeping:** Failure to record transactions makes monitoring difficult.

(1 × 3 = 3 marks)

c) Any two:

- It promotes regular savings for future financial needs.
- It reduces unnecessary borrowing and debt.
- It enables households to meet their financial obligations.
- It prepares families for unexpected expenses.
- It supports long-term investments and wealth creation.
- It promotes responsible spending and financial independence.

(1 × 2 = 2 marks)

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.1: YARNS

1.0 INTRODUCTION TO YARNS

Textiles play an important role in everyday life. Clothes, curtains, bed sheets, towels, blankets, carpets and other household articles are made from fabrics. Most fabrics are produced using yarns.

Yarn formation is an important stage in textile production because the characteristics of yarn determine the appearance, strength, durability, texture and suitability of the resulting fabric.

In Kenya, locally available natural fibres such as cotton, sisal, banana fibres and water hyacinth can be used to make yarns. Learners can explore these materials to develop practical skills, creativity and entrepreneurial opportunities.

1.1 Meaning of yarn

Yarn is a continuous strand of textile fibres or filaments that have been joined, twisted, or otherwise assembled to form a suitable length for making fabrics and other textile products.

Yarns are produced by:

- Twisting short fibres together.
- Combining continuous filaments.
- Twisting two or more individual yarns together.
- Interlocking or bonding fibres using appropriate techniques.

Examples of yarns:

1. Cotton yarn used for making shirts, dresses and bed sheets.
2. Wool yarn used for knitting sweaters and scarves.
3. Sisal yarn used for making ropes, mats and baskets.
4. Polyester yarn used for making clothing and upholstery fabrics.
5. Banana fibre yarn used for making decorative and textile products.

1.2 Importance of yarns in textile production

Yarns are important because they:

1. **Provide the basic material for fabric production:** Most woven, knitted and crocheted fabrics are made from yarns.
2. **Determine fabric strength:** Strong yarns produce fabrics that can withstand pulling and regular use.
3. **Influence fabric appearance:** The thickness, colour and texture of yarn affect the appearance of finished fabrics.
4. **Determine fabric durability:** Well-constructed yarns can contribute to fabrics that last longer.
5. **Influence fabric texture:** Yarns may produce smooth, rough, soft, coarse or fluffy fabrics.
6. **Determine fabric weight:** Thick yarns generally produce heavier fabrics than fine yarns when other factors are similar.
7. **Promote creativity:** Different yarns can be used to make decorative and functional textile products.

8. **Create employment opportunities:** Yarn production supports activities such as spinning, weaving, knitting and crocheting.
9. **Encourage use of local resources:** Natural fibres available in different Kenyan communities can be converted into useful textile materials.
10. **Promote entrepreneurship:** Individuals can produce and sell yarns, woven mats, baskets, bags and other textile products.

2.0 CLASSIFICATION OF TEXTILE YARNS

Textile yarns can be classified according to their structure, method of formation, fibre length and construction.

The major types covered in this sub-strand include:

1. Staple yarns.
2. Filament yarns.
3. Single yarns.
4. Ply yarns.

2.1 Staple yarns

Definition: Staple yarns are yarns made by twisting together short lengths of textile fibres to form a continuous strand.

Staple fibres have limited lengths and must be held together through twisting or other suitable methods to form yarn.

Examples of fibres used to make staple yarns:

- Cotton.
- Wool.
- Flax.
- Sisal.
- Short-cut polyester fibres.
- Processed banana fibres.

Characteristics of staple yarns

1. They are made from short fibres.
2. The fibres are held together mainly through twisting.
3. They usually have a slightly hairy or fuzzy surface.
4. They may have a soft and warm texture.
5. They can be spun into yarns of different thicknesses.
6. They may produce fabrics with good moisture absorption when made from absorbent natural fibres.
7. They may have projecting fibre ends on their surfaces.
8. Their strength depends on fibre quality, fibre length, fibre arrangement and degree of twist.

9. They can be used for weaving, knitting and crocheting.
10. They may produce fabrics that are comfortable to wear.

Examples of products made using staple yarns

- Cotton shirts.
- Cotton bed sheets.
- Woollen sweaters.
- Cotton towels.
- Knitted cardigans.
- Handmade sisal decorative products.

Advantages of staple yarns

- Can be produced from many natural fibres.
- Can provide warmth and comfort.
- Are suitable for different fabric-making techniques.
- Can be produced using locally available fibres.
- Their texture can be modified by blending different fibres.

Disadvantages of staple yarns

- May shed fibres during use.
- Can produce lint because of projecting fibre ends.
- Some staple yarns may break easily if poorly spun.
- Hairy surfaces may attract dust and dirt.
- Their production may require considerable labour and processing.

2.2 Filament yarns

Definition: Filament yarns are yarns made from one or more long, continuous fibres called filaments.

Unlike staple fibres, filaments have lengths that may extend continuously throughout the yarn.

Filament yarns can be natural or manufactured.

Examples:

- Silk filament yarn.
- Polyester filament yarn.
- Nylon filament yarn.
- Continuous rayon filament yarn.

Characteristics of filament yarns

1. They are made from long, continuous fibres.
2. They usually have smooth surfaces.

3. They produce fabrics with a smooth appearance.
4. They generally produce less lint than staple yarns.
5. They may have a shiny or lustrous appearance.
6. They can be strong depending on the fibre material.
7. They can be fine or thick.
8. They may be used in making lightweight or heavy fabrics.
9. They can be twisted together to improve their handling and performance.
10. They may produce fabrics with a flowing appearance.

Examples of products made from filament yarns

- Silk scarves.
- Polyester dresses.
- Nylon stockings.
- Curtains.
- Upholstery fabrics.
- Lightweight fashion garments.

Advantages of filament yarns

- Produce smooth fabrics.
- Usually produce little lint.
- Can have high tensile strength.
- Can be used to make lightweight fabrics.
- May produce fabrics with an attractive lustre.

Disadvantages of filament yarns

- Some may be slippery during sewing.
- Some synthetic filament fabrics may absorb little moisture.
- They may develop static electricity.
- Some may snag when caught by sharp objects.
- Some may feel uncomfortable in hot weather if moisture management is poor.

2.3 Differences between staple yarns and filament yarns

Staple yarns	**Filament yarns**
Made from short fibres.	Made from long, continuous fibres.
Usually have a hairy surface.	Usually have a smooth surface.
May produce lint.	Generally produce less lint.
Often have a soft, warm texture.	May have a smooth, silky texture.
Require fibres to be held together, commonly by twisting.	Can be formed from continuous filaments, with or without twisting.
Example: cotton yarn.	Example: silk filament yarn.

2.4 Single yarns

Definition: A single yarn is a yarn formed from one strand of fibres or filaments. In staple yarn production, the fibres are twisted together to form one continuous strand.

A single yarn is the basic yarn structure from which more complex yarn constructions can be produced.

Characteristics of single yarns

1. Consist of one strand.
2. May be made from staple fibres or continuous filaments.
3. May be thick or thin.
4. May be tightly or loosely twisted.
5. Can be used directly in fabric production.
6. May be less strong than a comparable multi-ply yarn, depending on construction.
7. Can have different surface textures.
8. Are commonly used in weaving and knitting.

Examples

- Single cotton yarn.
- Single wool yarn.
- Single linen yarn.
- Single polyester yarn.

Uses of single yarns

- Making woven fabrics.
- Making knitted garments.
- Producing embroidery materials.
- Manufacturing lightweight textile products.

2.5 Ply yarns

Definition: Ply yarns are yarns formed by twisting two or more single yarns together to produce a thicker or stronger yarn.

The individual strands used to make a ply yarn are known as component or single yarns.

For example:

- Two single yarns twisted together form a two-ply yarn.
- Three single yarns twisted together form a three-ply yarn.
- Four single yarns twisted together form a four-ply yarn.

Characteristics of ply yarns

1. They consist of two or more single yarns.
2. The component yarns are twisted together.

3. They may have greater strength and durability than comparable single yarns.
4. They are generally more uniform in structure.
5. They may be thicker than the individual component yarns.
6. They may resist abrasion better, depending on construction.
7. They are used in making strong textile materials.
8. They may have balanced or unbalanced twist.
9. They can be produced in different thicknesses.
10. They are suitable for various textile applications.

Uses of ply yarns

- Making strong woven fabrics.
- Producing sewing threads.
- Making ropes and cords.
- Manufacturing carpets.
- Making knitted garments.
- Producing upholstery materials.

Advantages of ply yarns

- Can improve yarn strength.
- Can improve abrasion resistance.
- May improve yarn uniformity.
- Can reduce the effects of defects in individual component strands.
- Can produce attractive decorative effects.

Disadvantages of ply yarns

- Require additional production processes.
- May be more expensive to manufacture.
- Can be heavier than single yarns.
- Poorly balanced ply construction may cause twisting or distortion during use.

2.6 Differences between single yarns and ply yarns

Single yarns	Ply yarns
Consist of one yarn strand.	Consist of two or more strands twisted together.
Have a simpler construction.	Have a more complex construction.
Usually require fewer production stages.	Require an additional plying stage.
May have lower strength than comparable ply yarns.	May have greater strength and abrasion resistance.
Example: single cotton yarn.	Example: two-ply cotton yarn.

3.0 CHARACTERISTICS OF GOOD QUALITY YARNS

The quality of a yarn determines its suitability for making different fabrics and textile products.

A good-quality yarn should possess the following characteristics:

3.1 Strength

- Strength refers to the ability of a yarn to withstand pulling forces without breaking.
- Strong yarns are suitable for making fabrics that undergo frequent handling and washing.
- Yarn strength depends on fibre strength, fibre length, twist and yarn construction.
- For example, strong cotton or polyester yarns can be used to make durable clothing.

3.2 Durability

- Durability is the ability of a yarn to withstand repeated use without wearing out quickly.
- Durable yarns are suitable for products such as carpets, upholstery and work clothes.
- Durability is influenced by fibre type, yarn construction and resistance to abrasion.

3.3 Evenness

- Evenness refers to uniformity in the thickness of a yarn along its length.
- An even yarn has a consistent diameter.
- Uneven yarns may produce fabrics with irregular surfaces and appearance.
- Even yarns are desirable when producing quality garments and household textiles.

3.4 Elasticity

- Elasticity is the ability of a yarn to stretch when a force is applied and return to its original length when the force is removed.
- Elastic yarns are useful in producing garments that require stretch and recovery.
- Elasticity depends on the properties of the fibres used.
- Wool and elastane are examples of materials associated with good elasticity.

3.5 Absorbency

- Absorbency refers to the ability of yarn fibres to take in moisture.
- Absorbent yarns are useful in making towels, bathing materials and clothing worn in warm conditions.
- Cotton is a good example of an absorbent textile fibre.

3.6 Flexibility

- Flexibility is the ability of a yarn to bend without breaking.
- Flexible yarns are easier to handle during weaving, knitting and sewing.
- Flexibility makes yarns suitable for producing different textile designs.

3.7 Smoothness

- Smoothness refers to the evenness of the yarn surface.
- Smooth yarns produce fabrics with a neat appearance.

- Filament yarns are generally smoother than staple yarns.

3.8 Twist

- Twist refers to the spiral arrangement of fibres or yarn strands around one another.
- Twist helps hold staple fibres together.
- It influences yarn strength, firmness, appearance and texture.
- Too little twist may result in weak yarns that easily separate.
- Excessive twist may produce hard yarns that are difficult to handle.

3.9 Lustre

- Lustre refers to the ability of a yarn to reflect light and produce a shiny appearance.
- Some silk and manufactured filament yarns have high lustre.
- Lustre is important when making decorative fabrics and fashionable garments.

3.10 Uniformity

- Uniformity refers to consistency in yarn thickness, construction and appearance.
- Uniform yarns produce fabrics with a regular texture.
- They are easier to use in textile production.

4.0 TWISTING OF YARNS

4.1 Meaning of yarn twist

Yarn twist is the spiral arrangement produced when fibres or yarn strands are rotated around one another.

Twisting is an important process in yarn formation because it holds fibres together and influences the physical properties of the yarn.

Importance of twisting yarns

1. Holds short fibres together to form a continuous yarn.
2. Improves yarn cohesion.
3. Influences yarn strength.
4. Reduces fibre slippage.
5. Helps determine yarn thickness and firmness.
6. Influences the appearance of yarn.
7. Improves handling during fabric production.
8. Determines the texture and characteristics of the resulting yarn.
9. Helps combine two or more yarn strands.
10. Influences the performance of the finished fabric.

4.2 Types of yarn twist

There are two main directions of yarn twist:

- S-twist.

- Z-twist.

A. S-twist

S-twist is produced when the fibres or yarn strands are twisted in a direction that follows the slope of the central portion of the letter S.

It is commonly described as a left-hand twist.

Characteristics of S-twist

1. The visible diagonal lines slope from the upper left towards the lower right when the yarn is viewed vertically.
2. It is produced by rotating the fibres or yarn in the appropriate direction.
3. It can be used in producing single yarns.
4. It may be combined with Z-twist during ply-yarn construction.
5. Its direction can influence the balance of the finished yarn.

B. Z-twist

Z-twist is produced when fibres or yarn strands are twisted in a direction that follows the slope of the central portion of the letter Z.

It is commonly described as a right-hand twist.

Characteristics of Z-twist

1. The visible diagonal lines slope from the lower left towards the upper right when the yarn is viewed vertically.
2. It is produced by rotating fibres or yarn in the appropriate direction.
3. It is commonly used in the manufacture of single yarns.
4. It can be combined with S-twist in ply-yarn production.
5. It influences yarn construction and balance.

4.3 Differences between S-twist and Z-twist

S-twist	**Z-twist**
Follows the slope of the letter S.	Follows the slope of the letter Z.
Commonly described as left-hand twist.	Commonly described as right-hand twist.
Has a different spiral direction from Z-twist.	Has an opposite spiral direction from S-twist.
Can be used in single and ply yarn construction.	Can be used in single and ply yarn construction.

4.4 Factors affecting the amount of twist in yarns

1. **Fibre length:** Longer fibres may require less twist to achieve cohesion than shorter fibres, depending on the material and yarn construction.
2. **Fibre fineness:** Fine fibres can be arranged closely together, influencing the twist needed.
3. **Yarn thickness:** Fine yarns and thick yarns may require different twist levels.
4. **Intended use:** Yarns for sewing and ropes may require different twist levels.
5. **Fibre type:** Cotton, wool, sisal and manufactured fibres have different physical properties.
6. **Desired texture:** The intended softness or firmness of the yarn influences twist selection.
7. **Manufacturing method:** Different spinning and plying methods produce different twist requirements.

4.5 Effects of too little or too much twist

Too little twist	Too much twist
Fibres may separate easily.	Yarn may become excessively hard.
Yarn may have low cohesion.	Yarn may become difficult to handle.
Yarn may shed fibres.	Yarn may develop excessive liveliness or snarling.
Yarn may break easily during handling.	Yarn may become less suitable for certain fabric structures.

5.0 NATURAL TEXTILE FIBRES USED IN YARN FORMATION

Natural textile fibres are fibres obtained from plants, animals or minerals.

In Kenya, several locally available plant fibres can be processed into yarns for textile and craft production.

5.1 Cotton fibres



Meaning: Cotton fibres are natural vegetable fibres obtained from the seed hairs of the cotton plant.

Characteristics

1. Soft and comfortable.
2. Highly absorbent.
3. Relatively strong, especially when wet.
4. Easy to dye.
5. Suitable for spinning into yarn.
6. Biodegradable under suitable conditions.
7. May wrinkle easily.
8. Can be damaged by certain microorganisms when stored in damp conditions.

Uses

- Shirts and dresses.
- Bed sheets.
- Towels.
- Blankets.
- Sewing threads.
- Knitted garments.

5.2 Sisal fibres



Meaning: Sisal fibres are natural vegetable fibres obtained from the leaves of the sisal plant.

Characteristics

1. Strong and durable.
2. Relatively coarse.
3. Have a rough texture.
4. Resistant to stretching.
5. Suitable for making ropes and heavy-duty products.
6. Can be twisted into strong strands.
7. Biodegradable.
8. Require processing to remove unwanted leaf material.

Uses

- Ropes.
- Mats.
- Carpets.
- Bags.
- Baskets.
- Decorative household articles.
- Twine for agricultural purposes.

Kenyan context: Sisal is grown in several parts of Kenya and provides raw materials for fibre-processing and craft enterprises.

5.3 Banana fibres





Meaning: Banana fibres are natural vegetable fibres obtained from the pseudostem (the apparent trunk) of the banana plant.

Characteristics

1. Naturally occurring plant fibres.

2. Can be extracted from banana stems after harvesting.
3. May be strong depending on the extraction and processing method.
4. Can be spun or twisted into strands.
5. Have a natural appearance.
6. Can be used in textile and craft production.
7. Are biodegradable.
8. Require cleaning and drying before yarn formation.

Uses

- Decorative ropes.
- Baskets.
- Mats.
- Bags.
- Wall hangings.
- Handmade textile products.

Environmental importance: Using banana stems for fibre production helps add value to agricultural residues that might otherwise be discarded.

5.4 Water hyacinth fibres



Meaning: Water hyacinth is an aquatic plant whose dried stalks can be processed and used in making craft and textile-like materials.

Characteristics

1. It is obtained from an aquatic plant.
2. The dried stalks can be twisted or bundled.
3. It has a natural appearance.
4. It can be used for weaving and decorative products.
5. It is relatively lightweight when dried.
6. It requires proper drying to prevent mould growth.
7. Its strength depends on preparation and processing.
8. It can be combined with other suitable natural materials.

Uses

- Baskets.
- Mats.
- Decorative items.
- Storage containers.
- Handbags.
- Interior decoration products.

Environmental importance: Harvesting water hyacinth from affected water bodies can support environmental management when done responsibly and without damaging aquatic ecosystems.

5.5 Wool fibres



Meaning: Wool is a natural animal fibre obtained mainly from the fleece of sheep.

Characteristics

1. Soft and warm.

2. Has good elasticity.
3. Can absorb moisture.
4. Has natural crimp.
5. Provides insulation against cold.
6. Can be spun into yarn.
7. May shrink or felt when exposed to unsuitable washing conditions.
8. Requires proper cleaning and preparation.

Uses

- Sweaters.
- Blankets.
- Scarves.
- Coats.
- Carpets.

5.6 Silk fibres



Meaning: Silk is a natural protein filament produced by silkworms, mainly during the formation of their cocoons.

Characteristics

1. Has a smooth surface.
2. Has natural lustre.
3. Is relatively strong.
4. Is lightweight.
5. Has a soft feel.
6. Drapes well.
7. Requires careful handling and laundering.

Uses

- Scarves.
- Dresses.
- Blouses.
- Ties.
- Decorative fabrics.

5.7 Comparison of selected natural fibres

Fibre	Source	Main characteristics	Common uses
Cotton	Cotton plant seeds	Soft and absorbent	Clothes, towels
Sisal	Sisal plant leaves	Strong and coarse	Ropes, mats
Banana	Banana pseudostem	Natural and versatile	Baskets, bags
Water hyacinth	Dried aquatic plant stalks	Lightweight when dry	Mats, baskets
Wool	Sheep fleece	Warm and elastic	Sweaters, blankets
Silk	Silkworm cocoon	Smooth and lustrous	Dresses, scarves

6.0 YARN FORMATION FROM NATURAL TEXTILE FIBRES

6.1 Meaning of yarn formation

Yarn formation is the process of converting loose textile fibres into continuous strands suitable for making fabrics and other textile products.

The process involves preparing, arranging, drawing and twisting fibres to produce yarns of the desired thickness, strength and texture.

Yarn formation can be carried out manually or mechanically.

In Kenya, learners can use locally available materials such as cotton, sisal, banana fibres and other suitable plant fibres to practise yarn formation.

6.2 Stages involved in yarn formation

The following are the main stages involved in producing yarn from natural staple fibres.

1. Fibre sourcing

- This involves obtaining raw fibres from natural sources.
- Fibres may be obtained from plants or animals.
- Examples include cotton from cotton plants, sisal from sisal leaves and wool from sheep.
- The fibres should be obtained responsibly to avoid environmental destruction.
- Learners should select fibres that are suitable for spinning.

2. Fibre extraction

- This involves separating fibres from their natural sources.
- Cotton fibres are separated from seeds through ginning.
- Sisal fibres are extracted from sisal leaves through decortication or suitable processing.
- Banana fibres are obtained from the pseudostem through mechanical or manual extraction.
- The extracted fibres should be handled carefully to avoid unnecessary damage.

3. Cleaning

- Cleaning involves removing unwanted materials from the extracted fibres.
- These materials may include dust, soil, plant residues, seeds and other impurities.
- Clean fibres produce better-quality yarns.
- Cleaning also helps prevent dirt from affecting the appearance and quality of the yarn.

4. Drying

- The cleaned fibres are dried to remove excess moisture.
- Drying may be done by spreading fibres in a clean, well-ventilated area.
- Fibres should not be exposed to excessive heat that may damage them.
- Proper drying helps prevent mould and unpleasant smells during storage.

5. Sorting and grading

- Fibres are separated according to length, thickness, cleanliness and quality.
- Long fibres may be separated from short fibres.
- Damaged fibres may be removed.
- Sorting helps produce yarns with more consistent characteristics.

6. Opening and loosening

- The fibres are gently separated to remove compacted portions.
- They are opened to allow easier arrangement and spinning.
- This process helps remove remaining loose impurities.
- Care should be taken not to break the fibres.

7. Blending or mixing

- Blending involves combining two or more types of fibres to produce a mixture with desired characteristics.
- For example, cotton fibres may be blended with suitable wool or manufactured fibres.
- Local plant fibres may also be combined for experimental craft applications where compatible.
- Blending can improve texture, appearance or performance.
- The proportions of fibres used influence the properties of the resulting yarn.

8. Carding and arranging

- Carding involves separating and aligning fibres to form a more organised mass.
- It helps remove remaining small impurities and tangled fibres.
- The fibres are arranged approximately parallel to one another.
- The prepared material may form a loose strand called a sliver or roving, depending on the process.

9. Drawing

- Drawing involves pulling the prepared fibres to make them thinner and more uniform.
- It helps arrange fibres more evenly.
- Drawing prepares the material for spinning.
- It contributes to consistent yarn thickness.

10. Spinning

- Spinning involves converting the prepared fibres into yarn by drawing and applying twist.
- The fibres are held together through twisting.
- The resulting yarn can be adjusted to the required thickness.
- Spinning can be carried out using a spindle or spinning wheel.

11. Winding

- The finished yarn is wound onto a bobbin, ball, cone or suitable support.
- Winding makes the yarn easier to store and handle.
- It also prepares the yarn for weaving, knitting and crocheting.

6.3 Flow chart showing yarn formation

Fibre sourcing

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Fibre extraction

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Cleaning and drying

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Sorting and grading

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Opening, blending and carding

↓

Drawing

↓

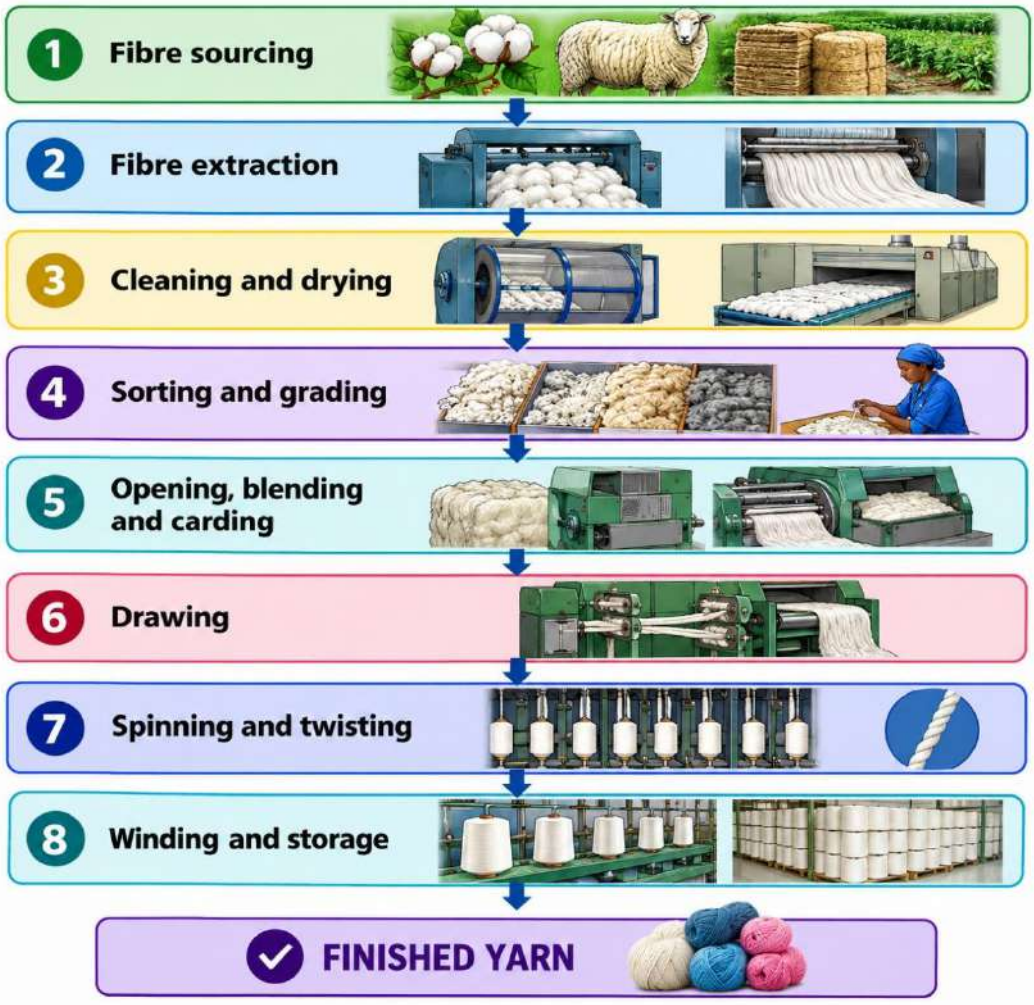
Spinning and twisting

↓

Winding and storage

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FINISHED YARN



7.0 TOOLS AND EQUIPMENT USED IN YARN FORMATION

Different tools and equipment are used depending on the fibre type and the method of yarn formation.

7.1 Hand spindle



A hand spindle is a simple tool used to twist fibres into yarn.

Parts of a simple drop spindle

1. Shaft: The long central rod that supports the spindle.
2. Whorl: A disc or weighted part that helps maintain rotation.
3. Hook or notch: Holds the yarn during spinning, depending on spindle design.

Uses

- Twisting fibres into yarn.
- Controlling the amount of twist.
- Producing handmade yarn.
- Demonstrating traditional yarn-making techniques.

7.2 Spinning wheel



A spinning wheel is a mechanical device used to twist fibres into yarn.

Uses

- Spinning natural fibres into yarn.
- Producing yarn more continuously than a simple hand spindle.
- Controlling yarn thickness and twist.
- Supporting small-scale textile production.

7.3 Hand combs



Hand combs or carders are used to separate and arrange fibres before spinning.

Uses

- Opening tangled fibres.
- Removing some impurities.
- Aligning fibres.
- Preparing fibres for spinning.

7.4 Scissors



Uses

- Cutting fibres to manageable lengths.
- Trimming unwanted fibre ends.
- Cutting finished yarn samples.

- Preparing materials for practical activities.

7.5 Other materials required

- Clean cotton fibres.
- Processed sisal fibres.
- Banana fibres.
- Suitable water hyacinth stalks.
- Clean trays.
- Bowls.
- Wooden rods.
- Storage containers.
- Labels.
- Mounting folders.
- Measuring ruler or tape measure.

8.0 PRACTICAL ACTIVITY: FORMING A 30 CM YARN USING NATURAL TEXTILE FIBRES

8.1 Learning activity

Learners should use natural textile fibres available in their locality to form a 30 cm yarn sample.

Examples include:

- Cotton.
- Sisal.
- Banana fibres.
- Other suitable locally available plant fibres.

8.2 Materials required

1. Clean natural textile fibres.
2. A wooden hand spindle or smooth wooden rod.
3. Scissors.
4. A ruler or measuring tape.
5. A clean working surface.
6. A folder for mounting the finished yarn.
7. Labels.
8. Gloves where necessary when handling coarse fibres.

8.3 Procedure for making yarn using hand-spinning

Step 1: Collect the fibres

- Obtain suitable natural fibres from a reliable source.

- Select fibres that are reasonably long, clean and free from excessive damage.
- Avoid collecting fibres from contaminated environments.

Step 2: Clean the fibres

- Remove dust, soil and other impurities.
- Separate unwanted plant materials.
- Ensure that the fibres are clean before spinning.

Step 3: Dry the fibres

- Spread the fibres on a clean surface.
- Allow them to dry in a well-ventilated area.
- Ensure that they are not excessively damp.

Step 4: Open and arrange the fibres

- Gently separate tangled fibres.
- Arrange the fibres in approximately the same direction.
- Remove excessively short or damaged pieces.
- Prepare a small bundle for spinning.

Step 5: Prepare the starting end

- Take a small portion of the fibres.
- Arrange the fibres so that their ends overlap.
- Attach the starting portion to the spindle or wooden rod using a secure method.

Step 6: Begin twisting

- Hold the prepared fibres gently.
- Rotate the spindle in one direction.
- Allow the fibres to twist around one another.
- Maintain even tension as the fibres are twisted.

Step 7: Draw out the fibres

- Gradually pull out a small amount of fibre from the prepared bundle.
- Allow the fibres to enter the twisted section.
- Maintain an even thickness throughout the yarn.
- Avoid pulling too much fibre at once.

Step 8: Continue spinning

- Continue rotating the spindle.
- Add more fibres by overlapping their ends with the previous section.
- Ensure that the fibres are held together firmly.

- Continue until the desired length is obtained.

Step 9: Measure the yarn

- Use a ruler or measuring tape to measure the yarn.
- Ensure that the finished yarn is approximately 30 cm long.
- Trim any unwanted projecting ends carefully.

Step 10: Secure the ends

- Secure the ends to prevent the yarn from unravelling.
- Wind the yarn carefully without stretching it excessively.

Step 11: Mount the sample

- Place the 30 cm yarn sample on a mounting folder.
- Fix it neatly using suitable adhesive or mounting tape.
- Avoid covering the yarn with excessive adhesive.

Step 12: Label the sample

Include the following information:

- Name of learner.
- Grade.
- Fibre used.
- Type of yarn formed.
- Approximate length.
- Date of production.
- Brief description of the process.

8.4 Expected outcome

The learner should produce a neat, continuous yarn measuring approximately 30 cm.

The yarn should:

- Have fibres held together.
- Possess reasonably uniform thickness.
- Have adequate twist.
- Be free from excessive dirt.
- Have securely finished ends.

8.5 Sample mounting presentation

YARN SAMPLE DISPLAY

GRADE 11 HOME SCIENCE PRACTICAL



Sample: Hand-spun natural fibre yarn

Fibre used: Cotton / Sisal / Banana fibre

Length: 30 cm

Method: Manual spinning and twisting

Characteristics observed:

- Thickness.
- Strength.
- Texture.
- Uniformity.
- Degree of twist.

Learner's name: _____

Date: _____

9.0 MAKING FABRIC SAMPLES USING YARNS FROM NATURAL FIBRES

9.1 Meaning of fabric

A fabric is a flexible material made by interlacing, interlooping, bonding or otherwise assembling textile fibres, yarns or filaments.

Fabrics are used to make clothing, household furnishings and decorative articles.

Examples include cotton fabric, knitted wool fabric, woven sisal fabric and crocheted cotton fabric.

9.2 Methods of making fabrics

The major methods of fabric construction include:

1. Weaving.
2. Knitting.
3. Crocheting.

9.3 Weaving



Definition: Weaving is the process of producing fabric by interlacing two sets of yarns at right angles to each other.

The two sets of yarns used in weaving are:

A. Warp yarns

- These are the lengthwise yarns in a woven fabric.
- They are held under tension on a loom.
- They form the foundation of the woven fabric.
- They are usually stronger to withstand the tension experienced during weaving.

B. Weft yarns

- These are the crosswise yarns in a woven fabric.
- They pass over and under the warp yarns.

- They are inserted across the width of the fabric.
- They help determine the appearance and texture of the fabric.

Characteristics of woven fabrics

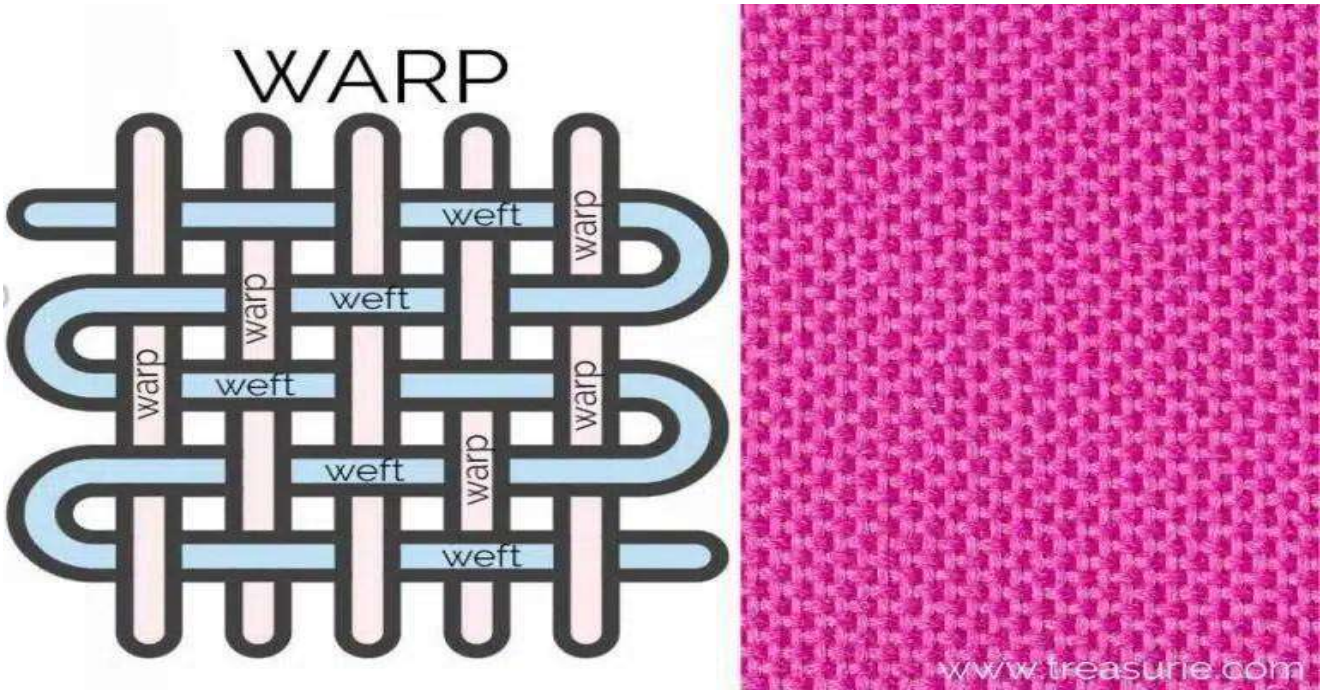
1. Usually have a stable structure.
2. Have warp and weft yarns crossing each other.
3. May have different degrees of stretch depending on the weave and fibres.
4. Usually have less stretch along the length and width than knitted fabrics.
5. May fray at the edges when cut.
6. Can be produced in different patterns.
7. Can be made using natural or manufactured yarns.

Examples of woven fabrics

- Plain-weave cotton.
- Denim.
- Canvas.
- Woven sisal mats.
- Linen fabric.

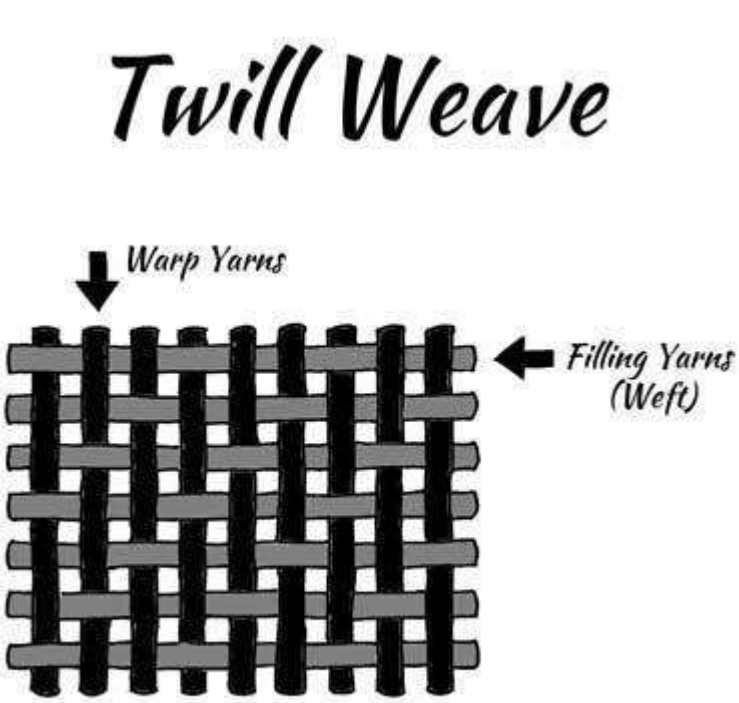
Basic types of weaving

A. Plain weave



- It is the simplest type of weave.
- Each weft yarn passes alternately over and under the warp yarns.
- It produces a simple and firm fabric.
- It is commonly used in making shirts, bed sheets and tablecloths.

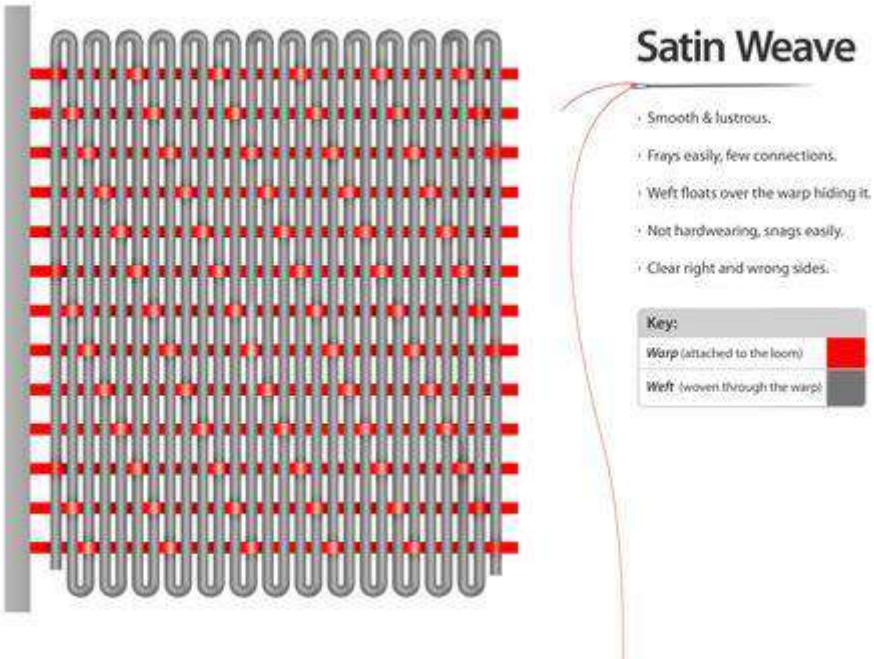
B. Twill weave





- It is characterised by diagonal lines on the fabric surface.
- The weft yarn passes over and under different numbers of warp yarns in a repeated sequence.
- It produces a relatively durable fabric.
- It is commonly used in making denim trousers, uniforms and workwear.

C. Satin weave



- It has long yarn floats on the surface.
- It produces a smooth and lustrous fabric.

- It is often used in decorative and fashionable garments.
- It may snag more easily than some other weave structures.

9.4 Knitting



Definition: Knitting is the process of making fabric by forming and interlocking a series of loops using one or more yarns.

Types of knitting

A. Weft knitting

- The yarn runs across the width of the fabric.
- Loops are formed horizontally.
- It is commonly used in hand knitting and many machine-knitted garments.
- Examples include sweaters, T-shirts and scarves.

B. Warp knitting

- The yarns run mainly lengthwise through the fabric.
- Several yarns form interconnected loops.
- It is commonly used in manufacturing sportswear, lingerie and some net fabrics.

Characteristics of knitted fabrics

1. Have interconnected loops.

2. Usually have more stretch than comparable woven fabrics.
3. Are flexible and comfortable.
4. May curl at the edges depending on construction.
5. May develop holes if loops break.
6. Can be lightweight or heavy.
7. Can be produced using cotton, wool and manufactured yarns.

Uses of knitted fabrics

- Sweaters.
- T-shirts.
- Socks.
- Cardigans.
- Scarves.
- Sportswear.
- Baby clothing.

9.5 Crocheting



Definition: Crocheting is the process of making fabric by forming and interlocking loops of yarn using a single hooked needle called a crochet hook.

Characteristics of crocheted fabrics

1. Are made using a crochet hook.
2. Usually involve one active loop at a time.
3. Can have decorative patterns.
4. May be open or closely worked.
5. Can be flexible.
6. Can have different thicknesses.
7. Can be made using cotton, wool and other suitable yarns.

Uses of crocheted fabrics

- Table mats.
- Handbags.
- Baby blankets.
- Decorative cloths.
- Caps.
- Sweaters.
- Cushion covers.
- Doilies.

9.6 Differences between weaving, knitting and crocheting

Weaving	**Knitting**	**Crocheting**
Uses two sets of yarns.	Uses one or more yarns to form loops.	Uses a crochet hook and yarn.
Involves warp and weft.	Involves interconnected loops.	Involves interlocking crochet stitches.
Usually produces stable fabrics.	Usually produces stretchable fabrics.	Produces fabrics with varied patterns and flexibility.
Uses a loom or suitable weaving frame.	Uses knitting needles or machines.	Uses a crochet hook.
Example: cotton shirt fabric.	Example: knitted sweater.	Example: crochet table mat.

10.0 PRACTICAL ACTIVITY: MAKING A FABRIC SAMPLE USING NATURAL FIBRE YARNS

10.1 Activity A: Making a woven fabric sample

Materials required

- Natural fibre yarn.
- Small cardboard frame or simple weaving loom.
- Scissors.
- Ruler.
- Comb or blunt tool for adjusting yarns.
- Adhesive or tape.

Procedure

1. Prepare the yarn by ensuring it is clean and reasonably uniform.
2. Cut a rectangular piece of cardboard.
3. Make small notches at opposite ends of the cardboard.
4. Stretch several yarn strands vertically across the frame to form warp yarns.
5. Secure the ends of the warp yarns.
6. Take another yarn to form the weft.
7. Pass the weft yarn over the first warp yarn and under the next.
8. Continue the alternating over-and-under movement.
9. On the next row, reverse the starting sequence.
10. Repeat until the desired fabric size is achieved.
11. Push each row gently together to produce an even structure.
12. Secure the ends of the weft yarn.
13. Remove the fabric carefully from the frame.
14. Trim loose ends.
15. Mount the sample in a folder and label it.

Expected outcome: A small plain-woven fabric sample made from natural fibre yarn.

10.2 Activity B: Making a knitted fabric sample

Materials required

- Natural fibre yarn.
- Two knitting needles.
- Scissors.
- Ruler.

Procedure

1. Select suitable natural fibre yarn.
2. Choose appropriate knitting needles.
3. Make a starting loop.
4. Cast on a small number of stitches.
5. Insert the right-hand needle into the first stitch.
6. Pass the yarn around the needle.
7. Pull the yarn through the existing loop.
8. Transfer the newly formed loop to the right-hand needle.
9. Repeat the process to form a row of stitches.
10. Continue knitting successive rows.
11. Cast off when the sample reaches the desired size.
12. Secure the yarn ends.
13. Mount and label the sample.

Expected outcome: A small knitted fabric sample showing interconnected loops.

10.3 Activity C: Making a crocheted fabric sample

Materials required

- Natural fibre yarn.
- Crochet hook.
- Scissors.
- Ruler.

Procedure

1. Select clean, suitable natural fibre yarn.
2. Choose an appropriate crochet hook.
3. Make a slip knot.
4. Form a foundation chain by pulling loops of yarn through the existing loop.
5. Insert the crochet hook into the appropriate chain stitch.
6. Yarn over and pull the yarn through.
7. Complete the selected crochet stitch.
8. Repeat the process to form a row.
9. Continue making rows until the required size is achieved.
10. Fasten off the final loop.

11. Trim excess yarn.
12. Mount the sample in a folder.
13. Label the fabric sample.

Expected outcome: A crocheted fabric sample showing decorative interlocking loops.

11.0 FACTORS THAT DETERMINE THE STRENGTH AND DURABILITY OF YARNS AND FABRICS

The strength and durability of textile materials are influenced by several factors.

11.1 Fibre type

- Different fibres possess different physical properties.
- Some fibres are naturally stronger than others.
- The type of fibre used influences the strength of the resulting yarn.
- For example, sisal is suitable for strong ropes, while cotton is commonly used for comfortable clothing.

11.2 Fibre length

- Long fibres generally provide better cohesion when spun into yarn.
- They have fewer fibre ends projecting from the yarn surface.
- Short fibres may require more twist to hold them together.
- Fibre length therefore influences yarn strength and uniformity.

11.3 Degree of twist

- Twist helps hold fibres together.
- Adequate twist improves yarn cohesion.
- Too little twist may result in weak yarns.
- Excessive twist may make yarns hard and unsuitable for some applications.

11.4 Yarn thickness

- Yarn thickness influences the strength and performance of textile materials.
- Thick yarns may be suitable for heavy-duty products.
- Fine yarns may be suitable for lightweight fabrics.
- However, thickness alone does not determine strength.

11.5 Yarn construction

- Single and ply yarns have different constructions.
- Ply yarns may provide improved strength and abrasion resistance.
- The quality of the component yarns influences the quality of the finished ply yarn.

11.6 Fabric construction

- The method used to construct fabric influences its performance.
- Woven fabrics have warp and weft yarns crossing each other.

- Knitted fabrics have interconnected loops.
- The tightness and arrangement of the structure influence durability.

11.7 Finishing processes

- Finishing processes can improve the appearance and performance of fabrics.
- Examples include washing, dyeing, pressing and suitable protective treatments.
- Poor finishing may weaken fibres or affect the fabric's appearance.

11.8 Care and maintenance

- Proper washing helps maintain fabric quality.
- Excessive heat may damage some textile fibres.
- Incorrect bleaching may weaken fibres.
- Proper drying and storage help prevent mould and deterioration.

11.9 Environmental conditions

- Excessive moisture may encourage mould growth.
- Direct sunlight may weaken or fade some textile materials.
- High temperatures may damage sensitive fibres.
- Proper storage helps maintain yarn and fabric quality.

12.0 FACTORS AFFECTING THE QUALITY OF FABRICS PRODUCED FROM YARNS

1. Quality of the raw fibres.
2. Length and fineness of fibres.
3. Yarn thickness.
4. Yarn twist.
5. Yarn strength.
6. Yarn uniformity.
7. Fabric construction method.
8. Density of yarns in the fabric.
9. Type of finishing applied.
10. Handling and storage conditions.

13.0 SAFETY PRECAUTIONS WHEN FORMING YARNS

Learners must observe safety when sourcing, preparing and spinning natural fibres.

Safety measures

1. Wear suitable protective gloves when handling coarse sisal and other rough fibres.
2. Use scissors carefully when cutting fibres.
3. Avoid collecting fibres from polluted water bodies or contaminated areas.

4. Wash hands after handling raw fibres.
5. Avoid inhaling dust from dry fibres.
6. Work in a clean, well-ventilated environment.
7. Keep sharp tools away from other learners.
8. Do not use damaged or contaminated materials.
9. Store scissors and other sharp tools safely after use.
10. Avoid using machinery without proper instruction.
11. Do not allow loose fibres to accumulate near electrical equipment.
12. Ensure that the working area is dry and free from unnecessary obstructions.
13. Report accidents or injuries immediately.
14. Dispose of unwanted fibre waste responsibly.

14.0 STORAGE AND CARE OF YARNS

Proper storage helps maintain yarn quality and prevents deterioration.

Guidelines

1. Store yarns in clean, dry containers.
2. Keep yarns away from excessive moisture.
3. Protect yarns from dust.
4. Store yarns away from direct sunlight.
5. Keep yarns away from insects and rodents.
6. Avoid placing heavy objects on delicate yarns.
7. Wind loose yarns into balls or skeins.
8. Label yarns according to fibre type and construction.
9. Separate different types of yarns.
10. Inspect stored yarns regularly for mould and damage.

15.0 ENTREPRENEURIAL OPPORTUNITIES IN YARN AND FABRIC PRODUCTION

Yarn formation and fabric construction can provide opportunities for income generation, employment and community development.

In Kenya, learners can use locally available materials to produce value-added textile products.

15.1 Business opportunities

1. **Hand-spun yarn production:** Producing and selling yarn made from cotton, banana and other suitable natural fibres.
2. **Sisal rope production:** Making ropes and twines for agricultural and domestic use.
3. **Basket weaving:** Using suitable natural fibres to produce baskets for storage and decoration.
4. **Crochet products:** Producing table mats, bags, caps and decorative items.

5. **Knitted garments:** Making sweaters, scarves and other clothing.
6. **Woven products:** Producing mats, rugs and decorative household fabrics.
7. **Textile training:** Offering training in spinning, weaving, knitting and crocheting.
8. **Fibre processing:** Supplying prepared natural fibres to artisans and small-scale textile producers.

15.2 Steps in establishing a small yarn production enterprise

1. Identify locally available natural fibres.
2. Carry out market research.
3. Identify potential customers.
4. Select suitable tools and equipment.
5. Determine the quality and type of yarn to produce.
6. Calculate production costs.
7. Establish a suitable selling price.
8. Produce sample yarns.
9. Test yarn quality.
10. Package and label finished products.
11. Advertise products through local markets and digital platforms.
12. Collect customer feedback and improve product quality.

15.3 Importance of using locally available materials

- Reduces dependence on imported raw materials.
- Encourages local innovation.
- Promotes environmental conservation when materials are sourced responsibly.
- Creates employment opportunities.
- Supports small-scale enterprises.
- Preserves traditional textile skills.
- Encourages value addition to agricultural materials.
- Promotes community development.
- Supports the development of locally made products.

16.0 CORE COMPETENCIES DEVELOPED

Core competence	How it is developed
Creativity and imagination	Learners generate creative ideas when forming yarns and making fabric samples.
Critical thinking and problem-solving	Learners investigate suitable fibres and solve challenges encountered during spinning.
Communication and collaboration	Learners discuss yarn characteristics and share practical findings.

Digital literacy	Learners use digital resources to research yarn formation and textile production.
Learning to learn	Learners independently explore different methods of yarn formation.
Citizenship	Learners use local resources responsibly and appreciate locally produced materials.
Self-efficacy	Learners develop confidence by making their own yarn and fabric samples.

17.0 VALUES DEVELOPED

1. Responsibility

- Learners handle fibres and equipment carefully.
- They use natural resources responsibly.
- They maintain cleanliness during practical activities.

2. Peace

- Learners cooperate during group activities.
- They respect the contributions and opinions of others.
- They follow agreed procedures.

3. Unity

- Learners share equipment and materials.
- They work together to produce fabric samples.

4. Respect

- Learners appreciate different textile-making traditions.
- They value the work of artisans and textile producers.

18.0 PERTINENT AND CONTEMPORARY ISSUES (PCIs)

1. Safety and security

- Learners use tools safely.
- They avoid inhaling fibre dust.
- They handle sharp equipment carefully.

2. Environmental conservation

- Learners use locally available natural materials responsibly.
- They reuse suitable agricultural residues.
- They avoid polluting the environment during fibre processing.

3. Financial literacy and entrepreneurship

- Learners calculate production costs.
- They identify market opportunities.
- They explore ways of earning income from yarn and fabric production.

4. Health and hygiene

- Learners maintain personal cleanliness.
- They clean their working surfaces.
- They avoid using contaminated fibres.

5. Cultural heritage

- Learners appreciate traditional spinning, weaving and craft-making skills in Kenyan communities.

19.0 KEY TERMS AND DEFINITIONS

Term	Meaning
Fibre	A fine strand of textile material used to make yarn.
Yarn	A continuous strand of fibres or filaments assembled for textile production.
Staple fibre	A fibre of limited length.
Filament	A long, continuous textile fibre.
Staple yarn	Yarn made by joining short fibres.
Filament yarn	Yarn made from continuous filaments.
Single yarn	A yarn consisting of one strand.
Ply yarn	Yarn made by twisting two or more single yarns together.
Spinning	The process of forming yarn from prepared fibres.
Twist	The spiral arrangement of fibres or yarn strands.
S-twist	A twist direction following the slope of the letter S.
Z-twist	A twist direction following the slope of the letter Z.
Weaving	Interlacing warp and weft yarns to make fabric.
Knitting	Forming fabric through interconnected loops of yarn.
Crocheting	Making fabric using a crochet hook and yarn.
Warp	Lengthwise yarns in a woven fabric.
Weft	Crosswise yarns in a woven fabric.
Carding	Separating and arranging fibres before spinning.
Roving	A prepared, loosely assembled strand of fibres ready for spinning.
Ginning	Separating cotton fibres from cotton seeds.
Lustre	The ability of a fibre or yarn to reflect light.
Absorbency	The ability to take in moisture.
Elasticity	The ability to return to the original shape after stretching.
Blending	Combining two or more types of fibres.

PART TWO: GRADE 11 HOMESCIENCE REVISION EXERCISES

SECTION A: MULTIPLE-CHOICE QUESTIONS

30 MARKS

Instructions: Answer all questions. Choose the correct answer from the alternatives A, B, C and D.

1. A textile learner is examining a strand made by twisting short cotton fibres together. Which type of yarn is being examined?

A. Filament yarn

B. Staple yarn

C. Metallic yarn

D. Elastic yarn

2. Which statement best describes a filament yarn?

A. It is made from short fibres.

B. It consists of loose fibres without any arrangement.

C. It is made from long, continuous fibres.

D. It is made exclusively from animal fibres.

3. A textile manufacturer requires a yarn with two individual strands twisted together. Which yarn should be selected?

A. Single yarn

B. Staple yarn

C. Filament yarn

D. Two-ply yarn

4. Which of the following is a natural animal fibre?

A. Sisal

B. Cotton

C. Wool

D. Banana fibre

5. The main purpose of twisting staple fibres during yarn formation is to:

A. Remove their natural colour.

B. Hold the fibres together.

C. Increase their moisture content.

D. Reduce their length.

6. Which characteristic is commonly associated with filament yarns?

A. Excessive projecting fibre ends.

B. Rough and hairy surfaces in all cases.

C. Smooth surfaces.

D. Inconsistent fibre length.

7. A learner observes that the diagonal lines of a yarn follow the central slope of the letter Z. Which type of twist does the yarn possess?

A. S-twist

B. Z-twist

C. Balanced twist

D. Reverse twist

8. Which of the following materials is obtained from the leaves of a sisal plant?

A. Silk

B. Cotton

C. Wool

D. Sisal fibre

9. The process of separating cotton fibres from cotton seeds is known as:

A. Knitting

B. Ginning

C. Weaving

D. Crocheting

10. Which tool is commonly used for manually twisting fibres into yarn?

A. Crochet hook

B. Sewing machine

C. Hand spindle

D. Tape measure

11. Which property describes the ability of a yarn to withstand pulling forces without breaking?

A. Lustre

B. Strength

C. Absorbency

D. Smoothness

12. A yarn has inconsistent thickness along its length. Which quality characteristic is lacking?

A. Evenness

B. Elasticity

C. Lustre

D. Absorbency

13. Which natural fibre is obtained from the pseudostem of the banana plant?

A. Wool

B. Silk

C. Banana fibre

D. Cotton

14. The process of gently separating tangled fibres before spinning is known as:

A. Opening

B. Dyeing

C. Pressing

D. Finishing

15. Which process involves pulling prepared fibres to make them thinner and more uniform?

A. Winding

B. Drawing

C. Ginning

D. Crocheting

16. Which of the following is the most appropriate reason for drying natural fibres before spinning?

A. To make them heavier.

B. To increase dirt content.

C. To prevent excessive moisture and mould growth.

D. To remove all natural fibre strength.

17. Which type of yarn construction is formed by twisting three single yarns together?

A. Single yarn

B. Three-ply yarn

C. Staple fibre

D. Filament fibre

18. A learner wants to make a smooth and lustrous fabric using a natural filament fibre. Which fibre would be most suitable?

A. Sisal

B. Cotton

C. Silk

D. Wool

19. In woven fabric, the lengthwise yarns are known as:

A. Weft yarns

B. Warp yarns

C. Ply yarns

D. Filament yarns

20. Which fabric construction method involves interlacing warp and weft yarns?

A. Knitting

B. Crocheting

C. Weaving

D. Spinning

21. A learner uses knitting needles to form interconnected loops of cotton yarn. Which fabric-making method is being used?

A. Weaving

B. Knitting

C. Crocheting

D. Carding

22. Which tool is specifically associated with crocheting?

A. Hand spindle

B. Crochet hook

C. Weaving shuttle

D. Carding comb

23. Which of the following is a characteristic of knitted fabrics?

A. They consist only of warp and weft yarns.

B. They are always rigid.

C. They are formed using interconnected loops.

D. They cannot stretch.

24. Which type of weave produces diagonal lines on the fabric surface?

A. Plain weave

B. Twill weave

C. Satin weave

D. Basket weave

25. Which of the following is an important safety measure when handling sisal fibres?

A. Handling all fibres with wet hands.

B. Working without protective equipment.

C. Wearing suitable protective gloves.

D. Allowing fibre dust to accumulate.

26. A textile producer wants to make a durable rope for agricultural use. Which locally available fibre would be particularly suitable?

A. Sisal

B. Silk

C. Cotton lint

D. Fine wool

27. Which term refers to combining two or more types of fibres?

A. Drawing

B. Blending

C. Winding

D. Ginning

28. Which factor contributes to the durability of a yarn?

A. Poor fibre quality.

B. Excessive dirt.

C. Suitable fibre strength and yarn construction.

D. Improper storage.

29. A learner uses dried water hyacinth stalks to make decorative baskets. Which benefit is demonstrated?

A. Environmental pollution.

B. Value addition to locally available materials.

C. Excessive use of imported materials.

D. Destruction of natural resources.

30. Which entrepreneurial activity can be developed from skills in yarn formation and crocheting?

A. Selling unrelated electronic equipment.

B. Producing and selling handmade crochet bags.

C. Manufacturing cement blocks.

D. Repairing motor vehicles.

SECTION B: STRUCTURED QUESTIONS

50 MARKS

Instructions: Answer all questions. Write your answers clearly and give relevant examples where necessary.

QUESTION 1: INTRODUCTION TO YARNS (8 MARKS)

a) Define the term yarn. (2 marks)

b) State four importance of yarns in textile production. (4 marks)

c) Give two examples of natural fibres used in yarn formation in Kenya. (2 marks)

QUESTION 2: TYPES OF YARNS (8 MARKS)

a) Differentiate between staple yarns and filament yarns. (4 marks)

b) State two characteristics of staple yarns. (2 marks)

c) State two uses of ply yarns. (2 marks)

QUESTION 3: YARN TWIST AND QUALITY (8 MARKS)

a) Explain the meaning of yarn twist. (2 marks)

b) Differentiate between S-twist and Z-twist. (2 marks)

c) Explain four characteristics of good-quality yarns. (4 marks)

QUESTION 4: NATURAL FIBRES AND YARN FORMATION (8 MARKS)

a) Identify four natural textile fibres that can be used in yarn formation. (2 marks)

b) Explain three stages involved in preparing natural fibres before spinning. (3 marks)

c) State three safety precautions observed during yarn formation. (3 marks)

QUESTION 5: FABRIC CONSTRUCTION (9 MARKS)

a) Define the term fabric. (2 marks)

b) Explain the three main methods of fabric construction. (3 marks)

c) Differentiate between warp yarns and weft yarns. (2 marks)

d) State two characteristics of knitted fabrics. (2 marks)

QUESTION 6: PRACTICAL APPLICATION AND ENTREPRENEURSHIP (9 MARKS)

a) Outline four steps followed when making a 30 cm yarn sample using natural textile fibres. (4 marks)

b) State three ways in which locally available natural fibres can promote entrepreneurship in Kenya. (3 marks)

c) State two benefits of using locally available materials in yarn production. (2 marks)

PART THREE: MARKING SCHEME

SECTION A: MULTIPLE-CHOICE ANSWERS

Question	Answer	Question	Answer
1	B	16	C
2	C	17	B
3	D	18	C
4	C	19	B
5	B	20	C
6	C	21	B
7	B	22	B
8	D	23	C
9	B	24	B
10	C	25	C
11	B	26	A
12	A	27	B
13	C	28	C
14	A	29	B
15	B	30	B

30 MARKS

SECTION B: SUGGESTED MARKING SCHEME

QUESTION 1: INTRODUCTION TO YARNS (8 MARKS)

a) Yarn is a continuous strand of textile fibres or filaments that have been joined, twisted or otherwise assembled for making fabrics and other textile products. (2 marks)

b) Importance of yarns:

Award 1 mark each for any four:

1. Used as the basic material for making fabrics.
2. Determine the strength of fabrics.
3. Influence fabric appearance.
4. Determine fabric texture.
5. Influence fabric durability.
6. Used in knitting and crocheting.
7. Provide employment opportunities.
8. Support textile entrepreneurship.
9. Promote the use of local resources.

(4 marks)

c) Examples:

- Cotton.
- Sisal.
- Banana fibre.

- Wool.
- Silk.
- Suitable processed water hyacinth material.

Award 1 mark each for any two. (2 marks)

QUESTION 2: TYPES OF YARNS (8 MARKS)

a) Differences:

Staple yarns	**Filament yarns**
Made from short fibres.	Made from long, continuous fibres.
Usually have a hairy surface.	Usually have a smooth surface.
May produce lint.	Generally produce less lint.
Fibres are commonly held together through twisting.	May consist of continuous filaments with or without twisting.

Award 1 mark for each correct comparison. (4 marks)

b) Characteristics of staple yarns:

- Made from short fibres.
- Usually have a hairy surface.
- May produce lint.
- Can be soft and warm.
- Require twisting or another suitable method to hold fibres together.

Award 1 mark each for any two. (2 marks)

c) Uses of ply yarns:

- Making strong fabrics.
- Producing sewing threads.
- Making ropes and cords.
- Producing carpets.
- Making knitted garments.
- Manufacturing upholstery materials.

Award 1 mark each for any two. (2 marks)

QUESTION 3: YARN TWIST AND QUALITY (8 MARKS)

a) Yarn twist is the spiral arrangement produced when fibres or yarn strands are rotated around one another to hold them together. (2 marks)

b) Differences:

- S-twist follows the slope of the central part of the letter S. (1 mark)
- Z-twist follows the slope of the central part of the letter Z. (1 mark)

c) Characteristics of good-quality yarns:

Award 1 mark each for any four correctly explained:

1. Strength – Ability to withstand pulling forces without breaking.
2. Evenness – Has uniform thickness throughout its length.
3. Durability – Withstands repeated use without wearing out quickly.
4. Elasticity – Can stretch and recover its original length.
5. Flexibility – Can bend without breaking.
6. Smoothness – Has an even surface.
7. Absorbency – Can take in moisture where the fibre permits.
8. Lustre – Has an attractive light-reflecting surface.

(4 marks)

QUESTION 4: NATURAL FIBRES AND YARN FORMATION (8 MARKS)

a) Natural textile fibres:

- Cotton.
- Sisal.
- Banana fibre.
- Wool.
- Silk.

Award ½ mark each for any four. (2 marks)

b) Stages:

Award 1 mark each for any three explained:

1. Extraction – Separating fibres from their natural sources.
2. Cleaning – Removing dust and unwanted materials.
3. Drying – Removing excess moisture.
4. Sorting – Separating fibres according to quality and length.
5. Opening – Separating tangled fibres.
6. Carding – Arranging fibres before spinning.
7. Blending – Combining different fibres where appropriate.

(3 marks)

c) Safety precautions:

Award 1 mark each for any three:

1. Wear protective gloves when handling coarse fibres.
2. Handle scissors carefully.
3. Work in a well-ventilated area.
4. Avoid inhaling fibre dust.

5. Keep the working area clean.
6. Store sharp tools safely.
7. Use clean and uncontaminated fibres.

(3 marks)

QUESTION 5: FABRIC CONSTRUCTION (9 MARKS)

a) Fabric is a flexible material made by interlacing, interlooping, bonding or otherwise assembling textile fibres, yarns or filaments. (2 marks)

b) Methods:

1. **Weaving:** Interlacing two sets of yarns called warp and weft at right angles to form fabric. (1 mark)
2. **Knitting:** Forming fabric by making interconnected loops using one or more yarns. (1 mark)
3. **Crocheting:** Forming fabric using a crochet hook to make and interlock loops of yarn. (1 mark)

c) Differences:

- Warp yarns run lengthwise in a woven fabric. (1 mark)
- Weft yarns run crosswise in a woven fabric. (1 mark)

d) Characteristics of knitted fabrics:

Award 1 mark each for any two:

1. Made from interconnected loops.
2. Usually stretchable.
3. Flexible and comfortable.
4. May curl at the edges.
5. Can be lightweight or heavy.
6. May develop holes when loops break.

(2 marks)

QUESTION 6: PRACTICAL APPLICATION AND ENTREPRENEURSHIP (9 MARKS)

a) Steps in making a 30 cm yarn sample:

Award 1 mark each for any four correctly explained:

1. Collect suitable natural fibres.
2. Clean the fibres to remove impurities.
3. Dry the fibres properly.
4. Sort and arrange the fibres.
5. Open and loosen the fibres.
6. Attach fibres to a spindle or suitable support.
7. Draw and twist fibres to form yarn.
8. Continue adding fibres while spinning.

9. Measure the yarn to obtain approximately 30 cm.
10. Secure the ends and mount the sample.

(4 marks)

b) Ways of promoting entrepreneurship:

Award 1 mark each for any three:

1. Producing and selling handmade yarn.
2. Making and selling sisal ropes.
3. Producing crochet bags and table mats.
4. Making woven baskets and mats.
5. Producing knitted garments.
6. Offering textile-making training.
7. Supplying processed natural fibres to artisans.

(3 marks)

c) Benefits:

Award 1 mark each for any two:

1. Reduces dependence on imported raw materials.
2. Creates employment opportunities.
3. Promotes environmental conservation through responsible resource use.
4. Encourages local innovation.
5. Promotes value addition to agricultural materials.
6. Supports small-scale enterprises.

(2 marks)

TOTAL: 50 MARKS

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.2: PATTERN BLOCKS AND PATTERN GRADING

1.0 INTRODUCTION TO PATTERN BLOCKS

1.1 Meaning of a Pattern

A **pattern** is a template or guide used to cut fabric into specific shapes and sizes when making garments or other textile products.

- Patterns provide the correct shapes and measurements needed to construct garments.
- They guide the cutting of fabric pieces that are later joined through sewing.
- Patterns help ensure that garment parts fit together correctly.
- They reduce fabric wastage by guiding accurate fabric cutting.
- They make it possible to reproduce the same garment design in different sizes.

Examples of garments made using patterns:

1. Dresses.
2. Skirts.
3. Shirts.
4. Trousers.
5. Shorts.
6. Blouses.
7. Jackets.
8. School uniforms.
9. Children's clothing.

1.2 Meaning of a Pattern Block

A **pattern block** is a basic, fitted pattern developed using standard or individual body measurements. It forms the foundation upon which different garment designs can be developed.

A pattern block is also known as a *basic block*, *foundation pattern* or *sloper*.

Pattern blocks normally have:

- No decorative design features.
- No unnecessary fullness.
- No style details such as collars, pockets or flounces.
- Basic construction lines such as darts, seams and waistlines.
- Appropriate ease where necessary to allow comfortable movement and fitting.

Examples of basic pattern blocks:

1. Bodice block – used to develop blouses, shirts, dresses and tops.
2. Skirt block – used to develop different skirt designs.

3. Sleeve block – used to develop different sleeve styles.
4. Shorts block – used to develop shorts and other lower-body garments.

1.3 Importance of Pattern Blocks in Clothing Construction

Pattern blocks are important because they:

1. **Provide a foundation for garment designing:** They serve as starting points for developing different clothing styles.

2. **Improve garment fitting:** They are drafted using accurate body measurements, making it easier to produce well-fitting garments.

3. **Reduce fabric wastage:** Pattern pieces guide the correct positioning and cutting of fabric.

4. **Save time:** Once prepared, a pattern block can be reused when making similar garments.

5. **Promote accuracy:** They help ensure that garment parts have the correct shapes and sizes.

6. **Encourage creativity:** Designers can modify basic blocks to produce different garment designs.

7. **Promote consistency:** They help produce garments of similar measurements and quality.

8. **Support mass production:** Clothing manufacturers use patterns to produce garments in different sizes.

9. **Reduce construction errors:** Correctly drafted patterns help prevent problems such as uneven seams and poorly fitting garments.

10. **Promote professional skills:** Pattern drafting develops precision, creativity, problem-solving and technical skills.

1.4 Difference Between a Pattern Block and a Commercial Pattern

Pattern block	Commercial pattern
A basic foundation pattern.	A ready-prepared pattern sold or supplied for garment construction.
Usually has no elaborate style features.	May include different garment styles and design details.
Used to develop other garment designs.	Used to construct a particular garment design.
May be drafted using individual measurements.	Usually provided in standard size ranges.
Can be modified to create different styles.	Contains instructions and markings for a specific design.

2.0 COMMERCIAL PATTERNS

2.1 Meaning of a Commercial Pattern

A **commercial pattern** is a ready-made garment pattern produced by a pattern-making company or manufacturer for sale or distribution to clothing makers.

It is normally packaged with pattern pieces, size information, cutting layouts and instructions on how to construct a garment.

Commercial patterns are useful to both beginners and experienced garment makers because they provide a prepared guide for cutting and sewing garments.

2.2 Contents of a Commercial Pattern

A commercial pattern package may contain:

1. Pattern envelope.
2. Pattern instruction sheet.
3. Pattern pieces.
4. Body measurement chart.
5. Finished garment measurement chart.
6. Fabric requirements.
7. Cutting layout.
8. Suggested fabrics.
9. Notions and accessories requirements.
10. Pattern alteration instructions.

2.3 Types of Commercial Patterns

A. Printed patterns

These are patterns printed on specially prepared paper.

- They contain pattern outlines, symbols and instructions.
- They are normally cut out or traced before use.
- They are available in different sizes.
- They are suitable for home sewing and professional garment construction.

B. Digital patterns

These are patterns supplied electronically.

- They can be downloaded from websites.
- They may be printed using a home or commercial printer.
- They can be stored electronically for future use.
- They are useful when patterns need to be accessed quickly.

C. Multi-size patterns

These are patterns containing several sizes on the same pattern sheet.

- Different sizes are represented by different lines.
- Each size has a distinct cutting line.
- The user selects the required size before cutting or tracing.

- They are useful when making garments for people with different body measurements.

2.4 Advantages of Commercial Patterns

1. They save time because the pattern is already prepared.
2. They provide construction instructions.
3. They are available in different sizes.
4. They help beginners learn garment construction.
5. They promote accuracy in cutting fabric.
6. They provide guidance on fabric requirements.
7. They include information on suitable fabrics and accessories.
8. They can be reused when properly stored.

2.5 Limitations of Commercial Patterns

1. Standard sizes may not fit every individual's body shape.
2. Some patterns require adjustments before use.
3. They may be expensive, especially imported patterns.
4. Instructions may be difficult for beginners to interpret.
5. Some patterns may not be suitable for locally available fabrics.
6. They may not reflect the preferences of all Kenyan consumers.
7. Paper patterns can tear or become damaged if poorly handled.

3.0 PATTERN MARKINGS AND SYMBOLS

3.1 Meaning of Pattern Markings

Pattern markings are lines, signs, symbols and instructions printed or drawn on pattern pieces to guide the cutting, positioning, alteration and construction of garments.

They communicate important information about how pattern pieces should be placed, cut, matched and sewn.

Pattern markings must be understood before cutting fabric because incorrect interpretation may result in poorly fitting or badly constructed garments.

3.2 Common Pattern Markings

A. Grainline

A grainline is a straight line marked on a pattern piece to show the direction in which the pattern should be positioned on the fabric.

- It usually runs parallel to the fabric's selvedge.
- It helps ensure that the garment hangs properly.
- It prevents unnecessary twisting or distortion of garment pieces.
- It maintains the correct drape and appearance of the garment.

How to use a grainline:

1. Fold or spread the fabric correctly.
2. Place the pattern piece on the fabric.
3. Measure the distance between the grainline and the selvedge at both ends.
4. Adjust the pattern until both measurements are equal.
5. Pin the pattern in position before cutting.

B. Place-on-Fold Line

This is a line showing where a pattern piece should be positioned along the folded edge of the fabric.

- It is usually indicated by a long straight line with instructions such as *PLACE ON FOLD*.
- No seam allowance is normally added along the folded edge.
- It produces a continuous, symmetrical fabric piece when opened.
- It prevents an unwanted seam at the centre of the garment.

Examples:

- Front bodice cut on fold.
- Back skirt cut on fold.
- Centre-front facing cut on fold.

C. Cutting Line

A cutting line indicates the exact outline along which the fabric should be cut.

- It shows the required shape of the fabric piece.
- It may be represented by a bold solid line.
- Different sizes on multi-size patterns may have different cutting lines.
- Cutting should be done carefully along the selected size line.

D. Stitching Line

A stitching line indicates where the sewing machine or hand stitches should pass when joining fabric pieces.

- It is usually found inside the cutting line.
- It determines the final shape and size of the garment.
- It helps maintain an accurate seam allowance.
- It guides the sewing of darts, seams and other garment sections.

E. Seam Allowance Line

A seam allowance is the extra fabric left beyond the stitching line to allow two or more fabric pieces to be joined.

- It provides sufficient fabric for sewing.
- It prevents raw edges from being exposed.
- It allows some adjustment during fitting.

- Its width depends on the garment design and construction method.

Common seam allowance measurements include:

- 1 cm for some enclosed seams.
- 1.5 cm for many ordinary garment seams.
- 2–2.5 cm where extra fitting allowance is required.
- Wider allowances for hems, depending on the garment.

Note: The seam allowance should always follow the pattern instructions and the intended construction method.

F. Notches

Notches are small marks made along the edges of pattern pieces to help match corresponding garment sections.

- They may be single or double.
- They help identify the front and back of sleeves.
- They assist in matching seams.
- They ensure that garment pieces are correctly joined.

Examples:

- Single notch – may indicate the front sleeve position.
- Double notch – may indicate the back sleeve position.
- Matching notches – show edges that should be joined.

G. Darts

A dart is a wedge-shaped fold stitched into fabric to remove excess fullness and give a garment shape that follows the body.

Darts help garments fit around curved body areas.

Common darts include:

1. Bust darts.
2. Waist darts.
3. Shoulder darts.
4. Elbow darts.
5. Skirt waist darts.

Important dart markings include:

- Dart legs.
- Dart point.
- Dart intake.
- Dart centre or fold line.

H. Centre Front Line

This is a vertical reference line indicating the centre of the front garment piece.

- It helps maintain garment symmetry.
- It guides placement of openings and fastenings.
- It is useful when drafting and cutting front garment pieces.

I. Centre Back Line

This is a vertical reference line indicating the centre of the back garment piece.

- It assists in maintaining balance.
- It guides the positioning of back openings.
- It helps ensure that both sides of the garment are symmetrical.

J. Button and Buttonhole Markings

These markings indicate where buttons and buttonholes should be positioned.

- They help maintain equal spacing.
- They ensure that buttons match corresponding buttonholes.
- They guide the construction of garment openings.

K. Lengthen or Shorten Lines

These are parallel lines indicating where a pattern may be lengthened or shortened.

- They help adjust garment length.
- They maintain the original pattern shape during alteration.
- They are useful when adapting patterns to different body proportions.

L. Hipline, Waistline and Bustline

These are reference lines showing important body levels.

- Bustline – indicates the bust level.
- Waistline – indicates the natural waist level.
- Hipline – indicates the hip level.

They are useful when drafting, fitting and altering patterns.

M. Pleat and Gather Markings

These markings indicate where fabric should be folded, pleated or gathered.

- They control fabric fullness.
- They help create decorative garment features.
- They ensure even distribution of fabric.

N. Fold Lines

These indicate where fabric or a pattern section should be folded.

They are used in the construction of hems, pleats, facings and other garment features.

O. Pattern Number and Piece Identification

Each pattern piece may have a number or name.

Examples:

- Front bodice – Piece 1.
- Back bodice – Piece 2.
- Sleeve – Piece 3.
- Front skirt – Piece 4.
- Back skirt – Piece 5.

These labels help the garment maker identify the correct pieces.

3.3 Summary of Common Pattern Markings

Pattern marking	**Meaning/use**
Grainline	Shows direction of pattern placement on fabric.
Place on fold	Indicates placement along folded fabric.
Cutting line	Shows where to cut the fabric.
Stitching line	Shows where to sew.
Notches	Help match corresponding pattern pieces.
Darts	Indicate areas where fabric is folded and stitched to shape the garment.
Centre front	Shows the centre of the front garment section.
Centre back	Shows the centre of the back garment section.
Buttonhole marks	Show where buttonholes should be made.
Button marks	Show where buttons should be attached.
Lengthen/shorten lines	Indicate where pattern length can be adjusted.
Pleat marks	Indicate where pleats should be formed.
Gather marks	Show where fabric should be gathered.

4.0 BODY MEASUREMENTS IN CLOTHING CONSTRUCTION

4.1 Meaning of Body Measurements

Body measurements are the dimensions of different parts of the human body taken using a tape measure to determine the correct size and fit of garments.

They provide the information needed when drafting, altering and grading garment patterns.

Accurate body measurements are important because garments must fit the wearer's body comfortably while allowing freedom of movement.

4.2 Importance of Taking Body Measurements

Body measurements are important because they:

1. **Ensure proper garment fitting:** They help produce garments that fit the body correctly without being too tight or too loose.

2. **Determine garment size:** They help establish the appropriate pattern size for an individual.

3. **Guide pattern drafting:** They provide the dimensions needed to construct basic bodice, skirt, sleeve and shorts blocks.

4. **Reduce material wastage:** Accurate measurements prevent unnecessary cutting and recutting of fabric.

5. **Improve garment appearance:** Correct measurements produce well-balanced and attractive garments.

6. **Assist in pattern alteration:** They help identify areas requiring adjustments, such as the waist, hips, bust and garment length.

7. **Promote comfort:** Correct measurements allow sufficient room for body movement.

8. **Support garment production:** They are useful when producing uniforms and other garments for individuals or groups.

9. **Promote accuracy:** They reduce errors during pattern drafting and garment construction.

10. **Assist in pattern grading:** They provide reference measurements for developing different garment sizes.

4.3 Tools and Equipment Used in Taking Body Measurements

A. Measuring tape



A measuring tape is a flexible measuring instrument used to take body measurements.

Uses:

- Measuring bust, chest, waist and hip circumferences.
- Measuring shoulder width.
- Measuring garment lengths.
- Measuring sleeve length.
- Measuring crotch depth.
- Measuring other curved body sections.

Characteristics:

- Flexible.
- Usually marked in centimetres and inches.
- Should not be stretched during measurement.
- Should have clear and accurate markings.

B. Full-length mirror



Uses:

- Helps observe body posture.
- Helps check whether the measuring tape is positioned correctly.
- Helps ensure that the tape remains level around the body.

C. Notebook and pen

Uses:

- Recording measurements.
- Organising measurements according to body parts.
- Preventing errors caused by forgetting measurements.
- Keeping records for future garment construction.

D. Well-fitting undergarments

These are worn during measurement to ensure that measurements represent the body accurately.

E. Measuring assistant

A second person may assist in taking accurate measurements, especially those around the back, shoulders and other areas that are difficult to measure independently.

5.0 GUIDELINES FOR TAKING BODY MEASUREMENTS

5.1 General Guidelines

The following guidelines should be observed when taking body measurements:

1. **Wear appropriate clothing:** The person being measured should wear light, well-fitting clothing or suitable undergarments.

2. **Stand naturally:** The person should stand upright without forcing the body into an unnatural position.

3. **Use an accurate measuring tape:** The tape should have clear markings and should not be stretched or damaged.

4. **Position the tape correctly:** Place the tape at the correct body level depending on the measurement required.

5. **Avoid tightening the tape:** The tape should touch the body comfortably without compressing it.

6. **Keep the tape level:** For circumferential measurements, ensure that the tape is horizontal around the body.

7. **Measure over the appropriate undergarments:** For example, bust measurements should be taken while wearing the usual supportive undergarment.

8. **Use the correct units:** Record measurements consistently in centimetres or inches.

9. **Record measurements immediately:** Write down each measurement as soon as it is taken.

10. **Repeat measurements:** Take measurements again to confirm accuracy.

11. **Maintain privacy and dignity:** Always obtain permission and conduct measurements respectfully.

12. **Avoid measuring over bulky clothing:** Thick clothing may produce inaccurate measurements.

13. **Use correct posture:** The person should not bend, stretch or hold their breath during measurement.

14. **Identify body landmarks:** Locate the natural waist, shoulder points, bust level and other reference points before measuring.

5.2 Preparation Before Taking Measurements

Before taking body measurements:

1. Prepare the measuring tape and notebook.
2. Ensure adequate lighting.
3. Explain the measurement procedure to the person.
4. Obtain consent before taking measurements.
5. Ask the person to wear suitable clothing.
6. Ensure the person stands comfortably.

7. Identify the body points to be measured.
8. Check that the measuring tape is in good condition.

6.0 SPECIFIC BODY MEASUREMENTS USED IN CLOTHING CONSTRUCTION

The following measurements are commonly used when drafting basic garment pattern blocks.

6.1 Bust Measurement

Meaning: Bust measurement is the circumference of the fullest part of the bust.

Procedure:

1. Ask the person to stand upright.
2. Position the tape around the fullest part of the bust.
3. Pass the tape around the back, keeping it level.
4. Ensure that the tape is not too tight or too loose.
5. Record the measurement in centimetres.

Uses:

- Drafting front and back bodice blocks.
- Determining blouse size.
- Constructing dresses and jackets.
- Adjusting garment fitting around the chest area.

6.2 Chest Measurement

Chest measurement is the circumference of the upper torso around the chest area, taken according to the intended garment and pattern system.

Procedure:

1. Position the tape around the chest at the required level.
2. Pass it under the arms and around the back.
3. Keep the tape horizontal.
4. Ensure that the person breathes normally.
5. Record the measurement.

Uses:

- Drafting shirts.
- Drafting children's garments.
- Constructing jackets.
- Determining upper-body garment dimensions.

Difference between bust and chest measurements: Bust measurement is taken around the fullest part of the bust, while chest measurement is taken around the chest at the level specified by the pattern system.

6.3 Waist Measurement

Waist measurement is the circumference of the body at its natural waistline.

Procedure:

1. Identify the natural waistline.
2. Place the measuring tape around the waist.
3. Keep the tape horizontal.
4. Allow the person to breathe normally.
5. Record the measurement without tightening the tape.

Uses:

- Drafting skirt blocks.
- Drafting trousers and shorts.
- Determining waistbands.
- Adjusting the waist of dresses and blouses.

6.4 Hip Measurement

Hip measurement is the circumference around the fullest part of the hips and buttocks.

Procedure:

1. Ask the person to stand naturally.
2. Place the tape around the fullest part of the hips and buttocks.
3. Check that the tape is level.
4. Avoid compressing the body.
5. Record the measurement.

Uses:

- Drafting skirt blocks.
- Drafting shorts.
- Drafting trousers.
- Determining garment width around the lower body.

6.5 Seat Measurement

Seat measurement is the circumference around the fullest part of the buttocks.

Procedure:

1. Ask the person to stand naturally.
2. Position the tape around the fullest part of the seat.
3. Keep the tape horizontal.
4. Ensure that it is not too tight.

5. Record the measurement.

Uses:

- Drafting shorts.
- Drafting trousers.
- Constructing skirts.
- Providing adequate room around the buttocks.

Note: Depending on the drafting system, hip and seat measurements may be treated as the same measurement or taken at different levels.

6.6 Shoulder Measurement

Shoulder measurement is the distance from one shoulder point to the other across the back, following the required measuring method.

Procedure:

1. Identify the shoulder points.
2. Place the tape from one shoulder point.
3. Measure across the back to the opposite shoulder point.
4. Record the measurement.

Uses:

- Drafting bodice blocks.
- Drafting shirt patterns.
- Constructing jackets.
- Ensuring correct shoulder fitting.

6.7 Across-Back Measurement

This is the horizontal distance across the upper back, usually measured between the back armhole reference points.

Procedure:

1. Ask the person to stand naturally.
2. Locate the back armhole reference points.
3. Place the tape horizontally across the upper back.
4. Record the measurement.

Uses:

- Drafting back bodice blocks.
- Determining back width.
- Ensuring comfort when moving the arms.
- Preventing tightness across the back.

6.8 Sleeve Measurement

Sleeve measurement refers to the length of the arm from the shoulder point to the required sleeve finishing level.

Procedure:

1. Ask the person to bend the elbow slightly.
2. Position the tape at the shoulder point.
3. Measure along the arm.
4. Stop at the desired sleeve length.
5. Record the measurement.

Uses:

- Drafting sleeve blocks.
- Making long-sleeved shirts.
- Making short-sleeved blouses.
- Making jackets and dresses.

6.9 Skirt Length Measurement

Skirt length is the vertical distance from the natural waistline to the desired skirt hemline.

Procedure:

1. Ask the person to stand upright.
2. Position the tape at the natural waistline.
3. Measure vertically downwards.
4. Stop at the desired skirt length.
5. Record the measurement.

Uses:

- Drafting skirt blocks.
- Constructing mini, knee-length and long skirts.
- Determining fabric requirements.

6.10 Sleeve Length Measurement

This measurement is the distance from the shoulder point to the required sleeve hemline.

It may be taken to produce:

- Short sleeves.
- Elbow-length sleeves.
- Three-quarter sleeves.
- Full-length sleeves.

6.11 Short Length Measurement

Short length is the distance from the natural waistline to the desired bottom edge of the shorts.

Procedure:

1. Identify the natural waistline.
2. Place the tape at the waist.
3. Measure down the side of the body.
4. Stop at the desired shorts length.
5. Record the measurement.

Uses:

- Drafting shorts blocks.
- Determining the required length of shorts.
- Constructing school sportswear and casual wear.

6.12 Crotch Depth Measurement

Crotch depth is the vertical distance from the natural waistline to the level of the crotch while the person is seated.

Procedure:

1. Ask the person to sit upright on a firm, level chair.
2. Keep the feet flat on the floor.
3. Position the tape at the natural waistline.
4. Measure vertically down to the chair surface.
5. Record the measurement.

Uses:

- Drafting shorts blocks.
- Drafting trousers.
- Determining crotch depth.
- Ensuring comfort when sitting and moving.

6.13 Summary of Body Measurements

Measurement	Main use
Bust	Bodice, blouse and dress drafting.
Chest	Shirt and upper-body garment drafting.
Waist	Skirt, shorts and trouser drafting.
Hip	Skirts, shorts and trousers.
Seat	Lower-body garment fitting.
Shoulder	Bodice and sleeve construction.
Across back	Back bodice construction.
Sleeve length	Sleeve drafting.
Skirt length	Skirt construction.

Short length	Shorts construction.
Crotch depth	Shorts and trouser construction.

7.0 PATTERN DRAFTING

7.1 Meaning of Pattern Drafting

Pattern drafting is the process of creating garment patterns by drawing measurements, lines, curves and shapes on pattern paper using body measurements and appropriate drafting techniques.

It involves converting body measurements into flat pattern pieces that can be used to cut fabric and construct garments.

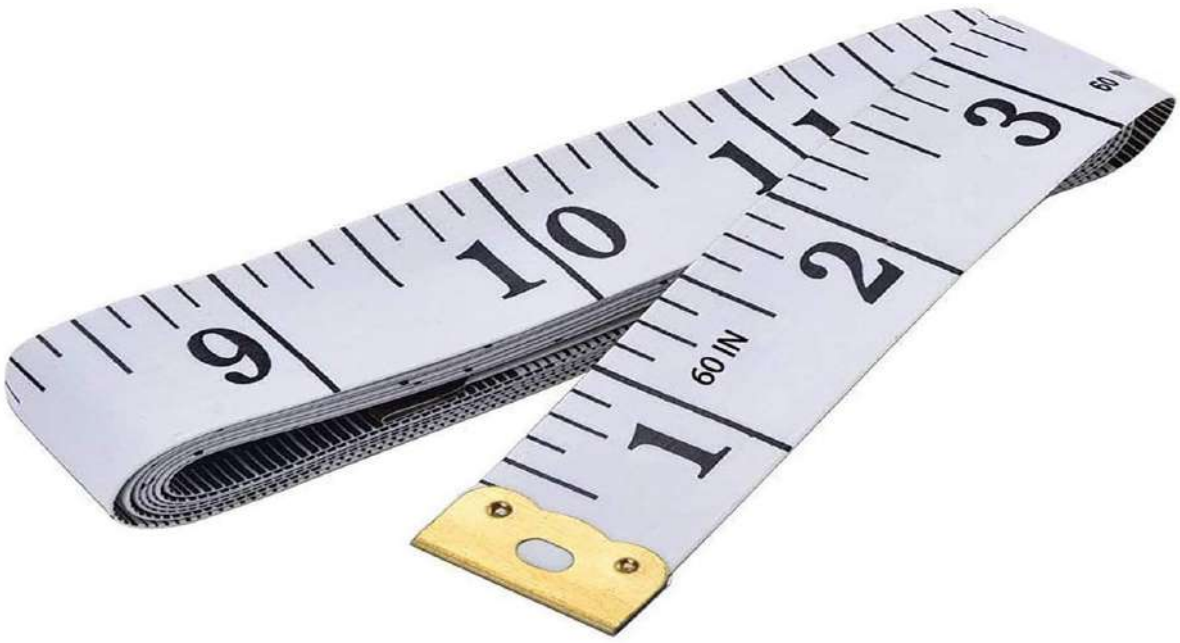
Pattern drafting is an important skill in clothing and textiles because it enables garment makers to produce garments that fit the intended wearer.

7.2 Importance of Pattern Drafting

1. It provides accurate garment patterns.
2. It promotes proper garment fitting.
3. It allows the development of different garment designs.
4. It reduces fabric wastage.
5. It improves garment quality.
6. It encourages creativity and innovation.
7. It promotes professional clothing production.
8. It makes it easier to alter garments.
9. It supports production of customised clothing.
10. It develops technical and problem-solving skills.

7.3 Tools and Equipment Used in Pattern Drafting

A. Measuring tape



Used for taking and transferring body measurements.

B. Pattern paper



Used for drawing and developing pattern pieces.

C. Straight ruler



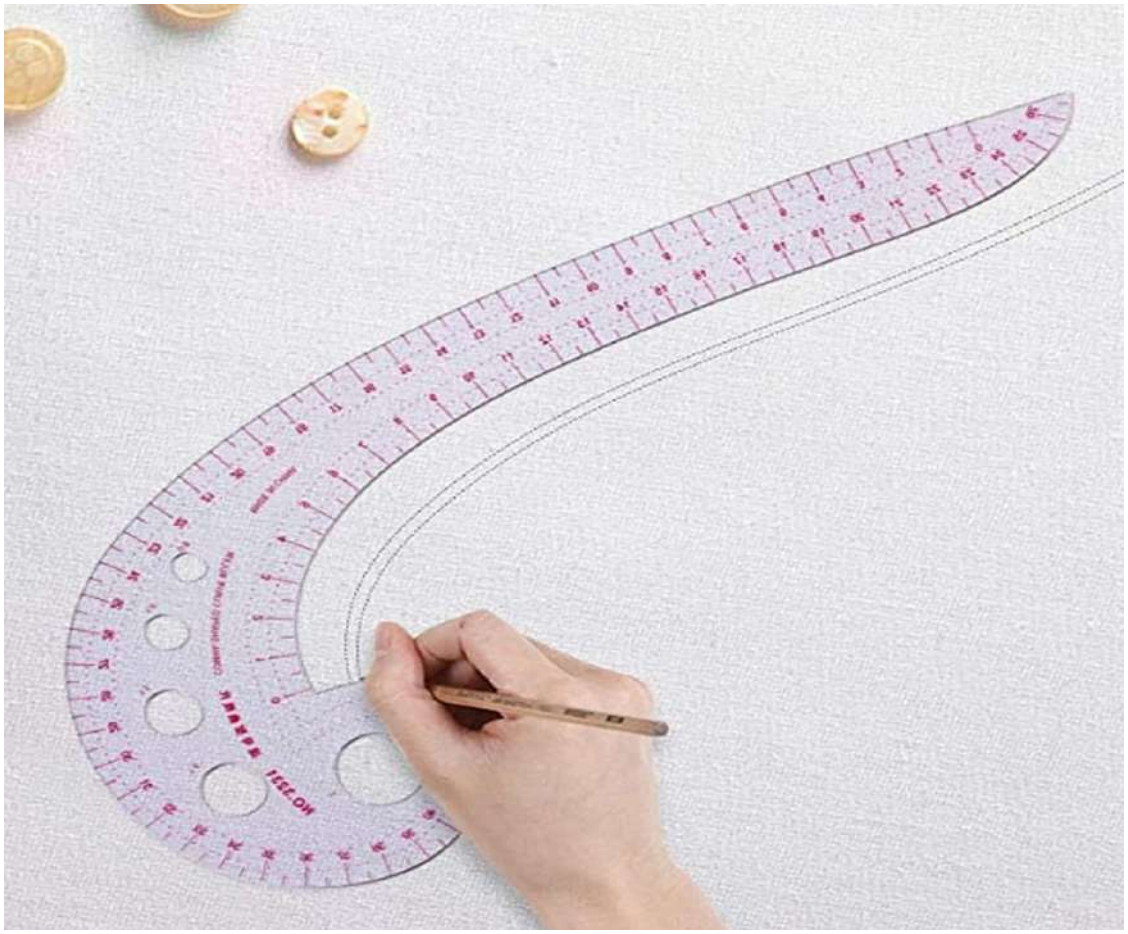
Used for drawing straight lines, such as centre lines, waistlines and grainlines.

D. L-square



Used for drawing right angles and ensuring accurate measurements.

E. French curve



Used for drawing smooth curves such as:

- Armholes.

- Necklines.
- Hip curves.
- Crotch curves.
- Sleeve curves.

F. Hip curve ruler

Used for drawing smooth curves around the hip and other curved pattern sections.

G. Pencil

Used for drawing construction lines, marking measurements and making corrections.

H. Eraser

Used for removing unwanted pencil marks.

I. Paper scissors

Used for cutting pattern paper.

J. Tracing wheel



Used for transferring pattern markings from one sheet of paper to another using tracing paper.

K. Tracing paper

Used for transferring pattern outlines and markings.

L. Pins

Used for securing pattern paper to fabric or holding pattern sections together.

M. Masking tape

Used for joining paper sections and holding pattern pieces in position.

N. Pattern notcher

Used for making small notches along pattern edges to assist in matching garment sections.

O. Awl

Used for transferring points such as dart points and other important markings onto pattern paper or fabric.

7.4 Materials Used in Pattern Drafting

1. Pattern paper.
2. Tracing paper.
3. Masking tape.
4. Pencils.
5. Erasers.
6. Tailor's chalk.
7. Pins.
8. Notebook.
9. Recording sheets.
10. Commercial patterns for reference.

8.0 GENERAL PROCEDURE FOR PATTERN DRAFTING

The following procedure can be followed when drafting basic garment pattern blocks:

1. Identify the garment pattern block to be drafted.
2. Collect the required body measurements.
3. Prepare the drafting tools and materials.
4. Select suitable pattern paper.
5. Draw the main vertical and horizontal construction lines.
6. Mark the required body measurements.
7. Join the marked points using appropriate straight and curved lines.
8. Develop the required garment shape.
9. Mark darts and other shaping features.
10. Add appropriate seam allowances according to the drafting system.
11. Indicate the grainline and other pattern markings.
12. Label each pattern piece.
13. Check the measurements and balance of the drafted pattern.
14. Cut out the pattern pieces carefully.

15. Store the pattern appropriately.

9.0 DRAFTING BASIC PATTERN BLOCKS

Basic pattern blocks are the foundation of garment construction. They are used to create different styles of clothing.

The main basic blocks studied in this sub-strand are:

1. Bodice block.
2. Skirt block.
3. Sleeve block.
4. Shorts block.

9.1 DRAFTING A BASIC BODICE BLOCK

Meaning of a Bodice Block

A bodice block is a basic fitted pattern used to develop the upper part of garments covering the torso, such as blouses, shirts, dresses and jackets.

It normally contains front and back sections and may include darts to shape the garment around the bust and waist.

Parts of a Basic Bodice Block

1. Front bodice.
2. Back bodice.
3. Neckline.
4. Shoulder line.
5. Armhole.
6. Bustline.
7. Waistline.
8. Bust dart.
9. Waist dart.
10. Centre front.
11. Centre back.

Importance of a Bodice Block

- Provides a foundation for designing blouses and dresses.
- Helps achieve proper fitting around the bust and waist.
- Assists in designing different necklines.
- Can be adapted to create different sleeve styles.
- Provides a foundation for developing jackets and shirts.

Measurements Required

- Bust.
- Waist.
- Shoulder.
- Across back.
- Back waist length.
- Front waist length.
- Bust point distance.
- Bust depth.
- Neck circumference, depending on drafting system.

General Drafting Procedure

A. Drafting the back bodice

1. Prepare a suitable sheet of pattern paper.
2. Draw a vertical centre-back reference line.
3. Mark the required back waist length.
4. Draw the horizontal waistline.
5. Mark the required back width using the bust or chest measurement and the chosen drafting formula.
6. Mark the shoulder point.
7. Develop the neckline using a French curve.
8. Draw the shoulder slope.
9. Mark the armhole depth.
10. Shape the armhole using a French curve.
11. Mark the waist dart position where required.
12. Join the points to form the back bodice outline.
13. Add the required pattern markings.

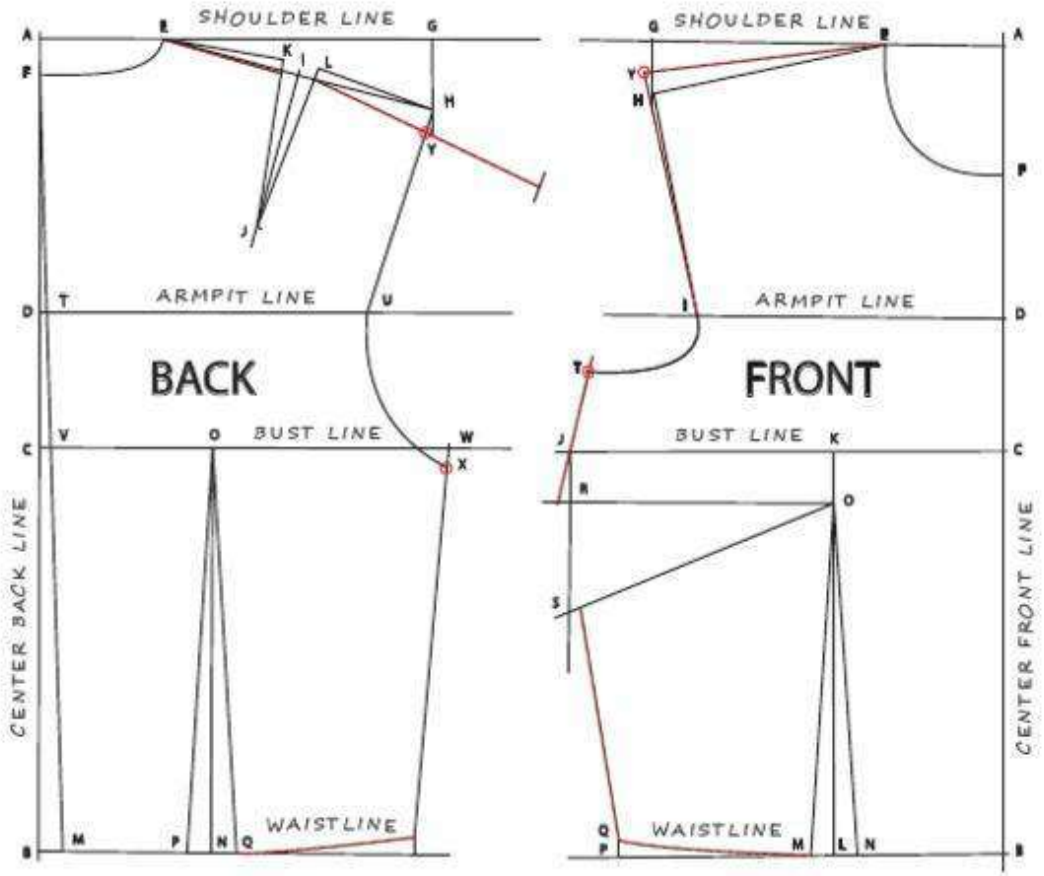
B. Drafting the front bodice

1. Draw a vertical centre-front line.
2. Mark the required front waist length.
3. Draw the waistline.
4. Mark the bust level.
5. Mark the bust point using the bust measurements.
6. Develop the neckline.
7. Draw the shoulder slope.

8. Mark the armhole depth.
9. Shape the front armhole.
10. Draft the bust dart.
11. Draft the waist dart.
12. Complete the front bodice outline.
13. Add the necessary pattern markings.

Bodice Block Pattern Making/Drafting Diagram

You can use this diagram as a reference when drafting your own pattern and the measurement list below.



MEASUREMENTS

Neck Circumference: _____

Shoulder Width: _____

Front Armpit Distance: _____

Back Armpit Distance: _____

Bust circumference: _____

Bust Distance: _____

Bust Length: _____

Front Bodice Length: _____

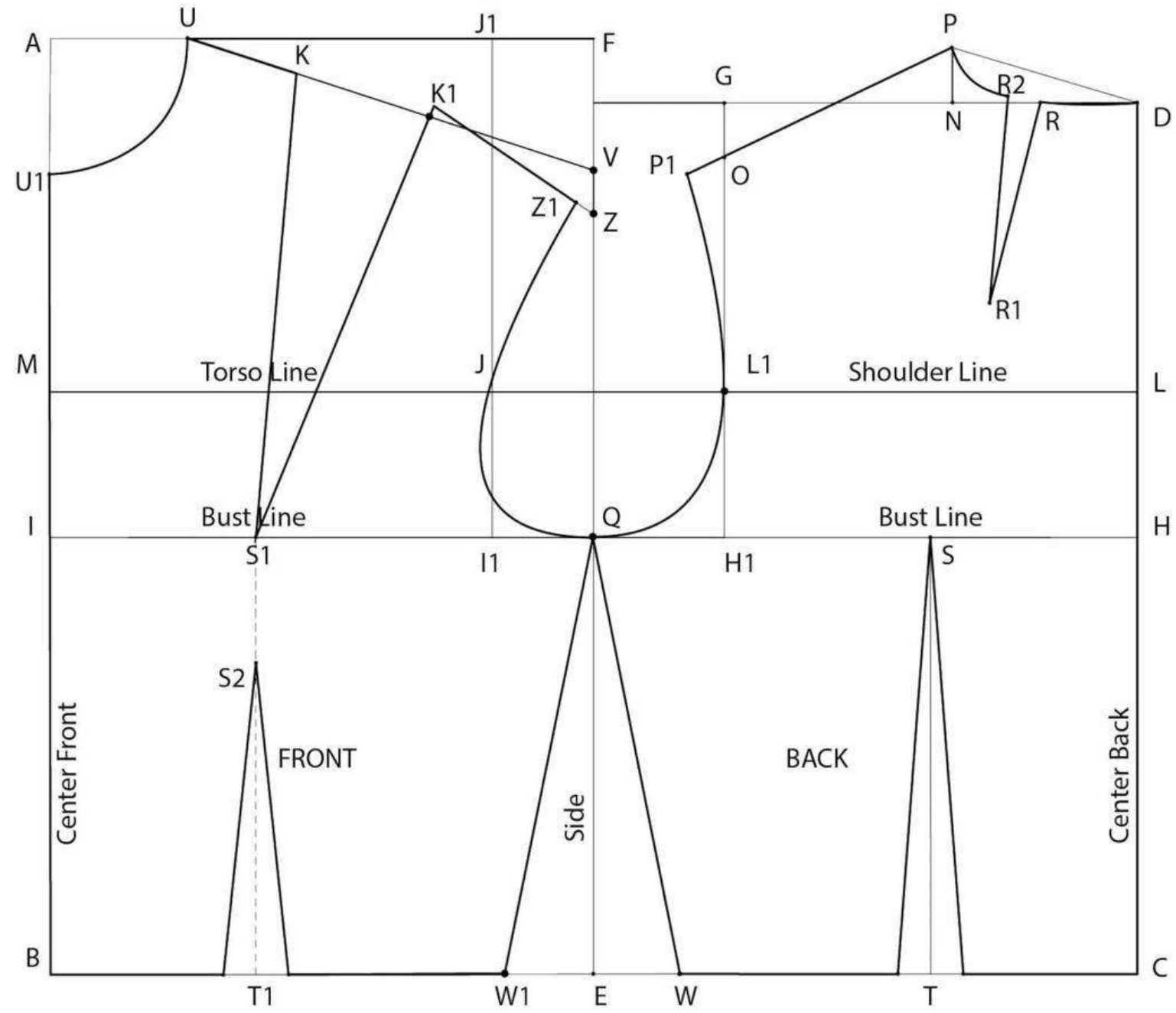
Back Bodice length: _____

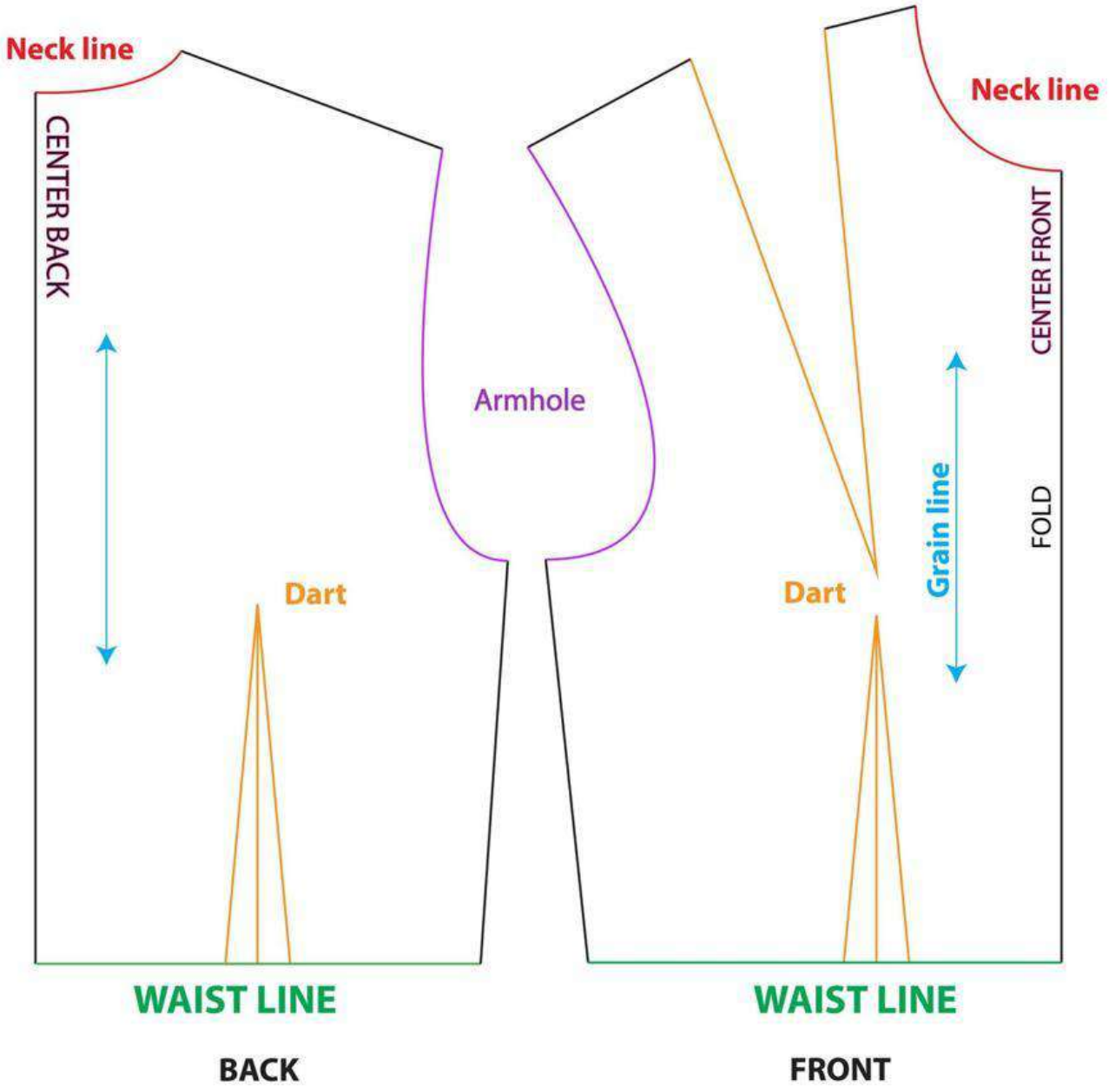
Waist Circumference: _____

Lower Hip Circumference: _____

Upper Hip Circumference: _____

Side Seam Length: _____


A
U
J1
F
K
K1
V
Z1
Z
U1
P
G
R2
N
R
D
P1
O
R1
M
Torso Line
J
L1
Shoulder Line
L
I
Bust Line
Q
Bust Line
H
S1
I1
H1
S
S2
Center Front
FRONT
Side
BACK
Center Back
B
C
T1
W1
E
W
T



Important: Exact drafting formulas and allowances vary between pattern-making systems. The teacher should demonstrate the selected drafting method using the learner's actual body measurements.

Common Uses of the Bodice Block

1. Developing blouse patterns.
2. Developing shirt patterns.
3. Designing dresses.
4. Designing jackets.
5. Creating fitted tops.
6. Developing school uniform tops.

9.2 DRAFTING A BASIC SKIRT BLOCK

Meaning of a Skirt Block

A skirt block is a basic pattern used to develop different skirt designs. It covers the lower part of the body from the waist to the required skirt length.

A basic skirt block normally consists of front and back sections.

Parts of a Basic Skirt Block

1. Front skirt.
2. Back skirt.
3. Waistline.
4. Hipline.
5. Centre front.
6. Centre back.
7. Side seam.
8. Waist darts.
9. Hemline.
10. Grainline.

Measurements Required

1. Waist circumference.
2. Hip circumference.
3. Skirt length.
4. Waist-to-hip depth.
5. Dart placement measurements.

Importance of a Skirt Block

- Provides a foundation for skirt design.
- Helps produce well-fitting skirts.
- Makes it easier to design different skirt styles.
- Helps determine the correct skirt length.
- Reduces cutting and construction errors.

General Procedure for Drafting a Basic Skirt Block

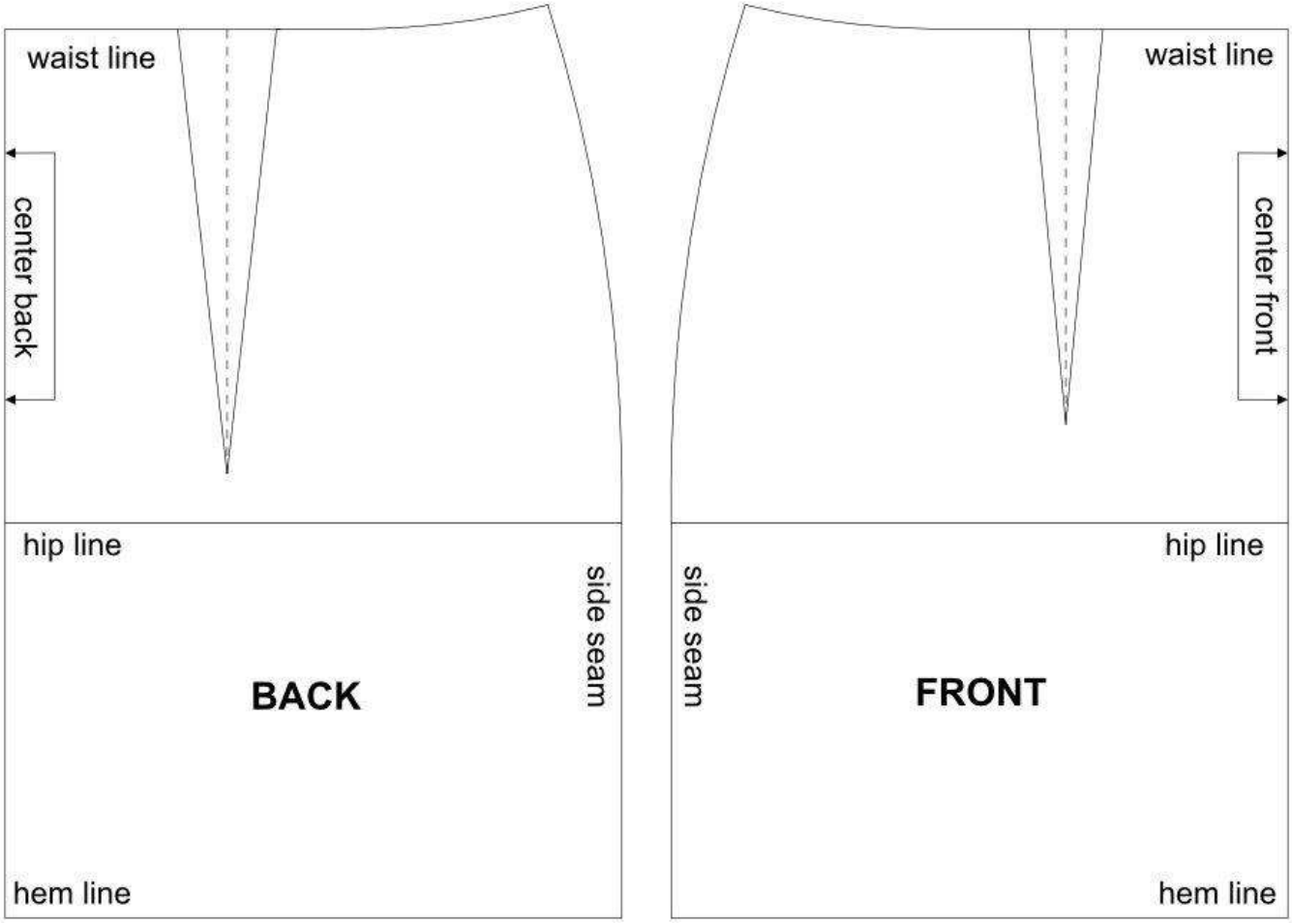
A. Front skirt

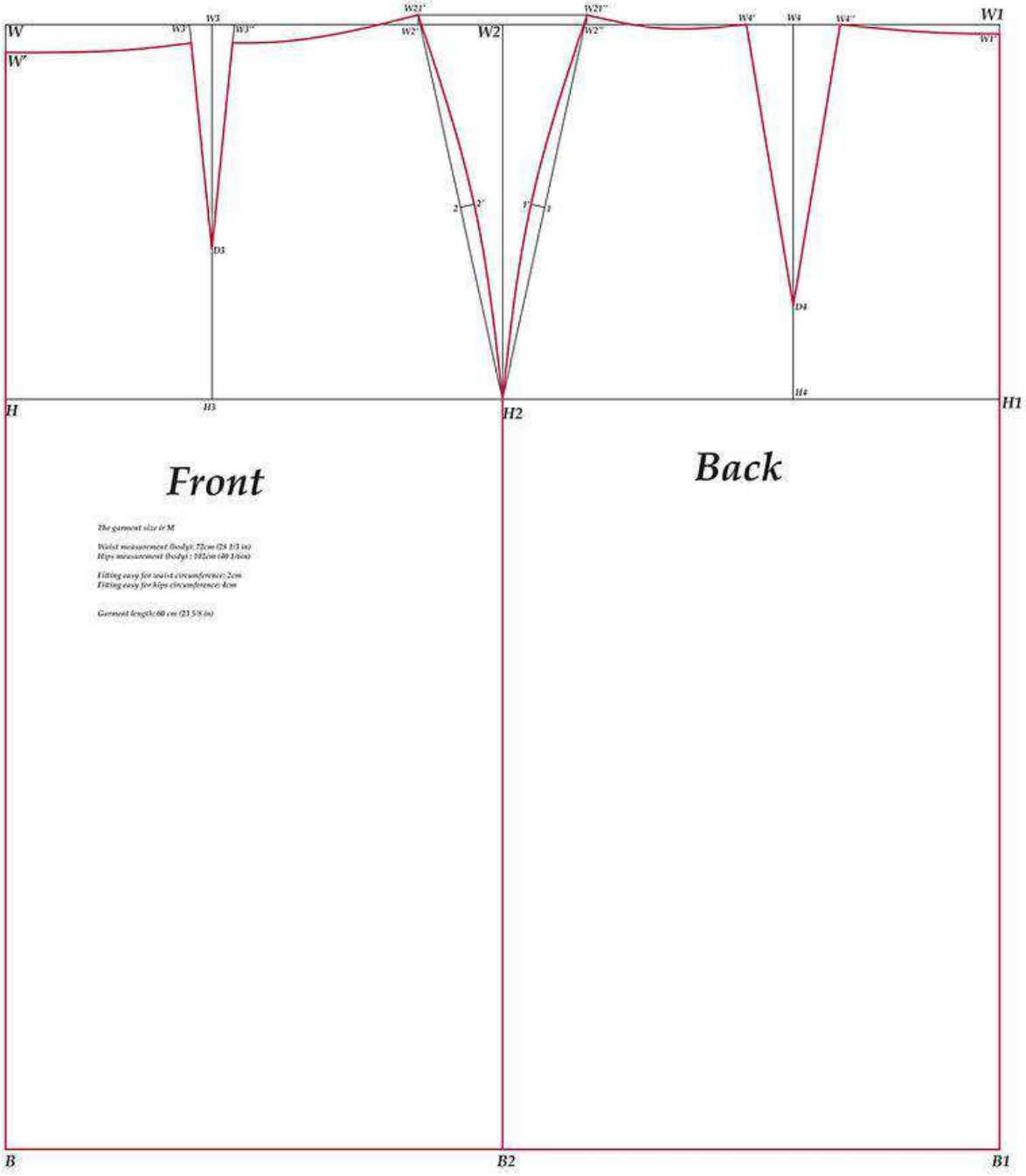
1. Prepare pattern paper.
2. Draw a vertical centre-front line.
3. Mark the required skirt length.
4. Draw the waistline and hemline.

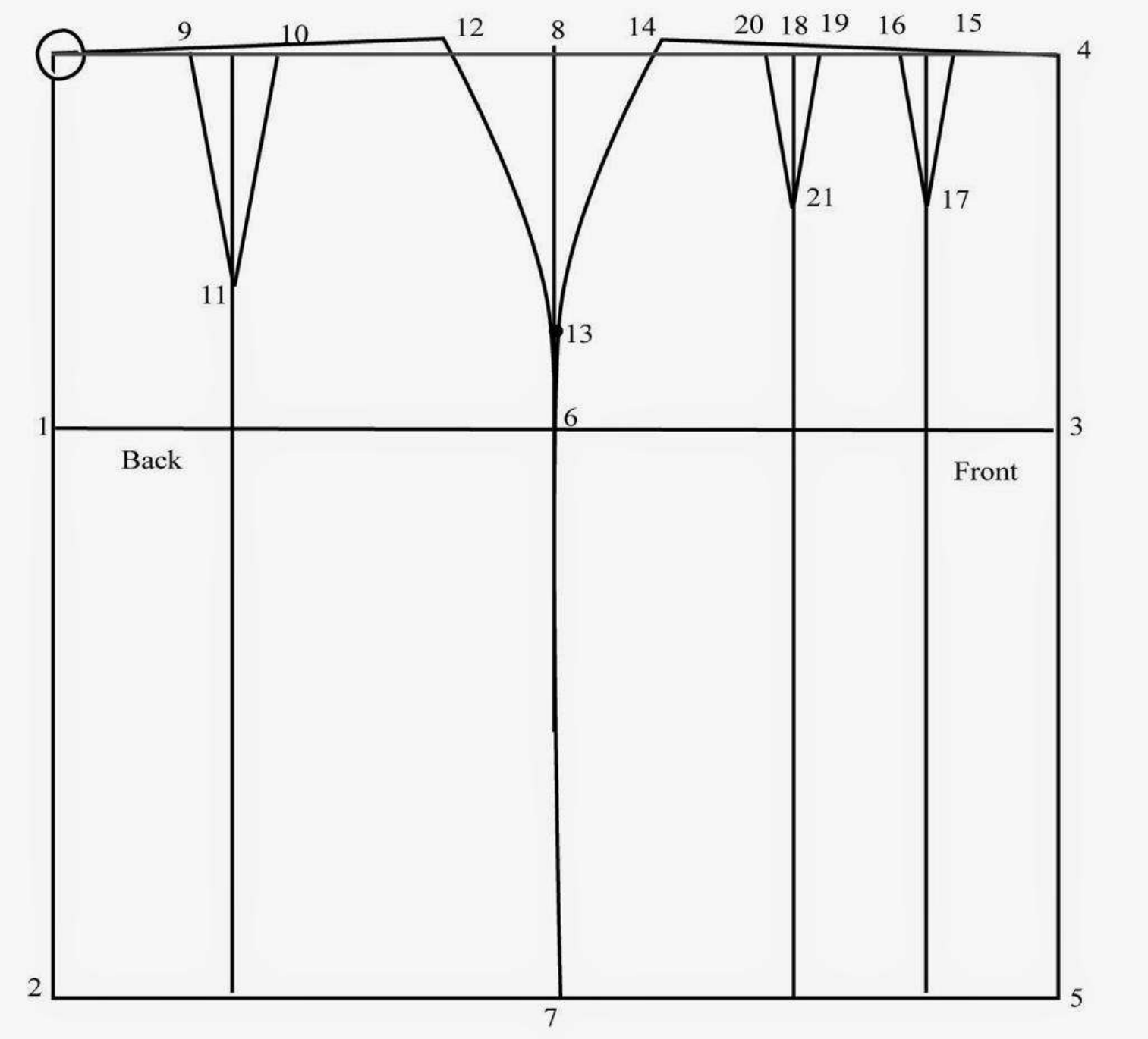
5. Mark the hipline at the required waist-to-hip depth.
6. Apply the appropriate hip measurement formula.
7. Apply the appropriate waist measurement formula.
8. Determine the waist dart position and intake.
9. Shape the side seam.
10. Join the required points smoothly.
11. Add the grainline.
12. Mark the cutting and stitching lines.

B. Back skirt

1. Draw the centre-back line.
2. Mark the required skirt length.
3. Draw the waistline, hipline and hemline.
4. Apply the required hip and waist measurements.
5. Determine the position and intake of the back dart.
6. Shape the waistline.
7. Shape the side seam.
8. Complete the outline.
9. Mark the grainline and other pattern symbols.


waist line
center back
hip line
side seam
BACK
hem line
waist line
center front
hip line
side seam
FRONT
hem line


W
W"
W3
W3'
W3"
W21'
W2'
W2
W21"
W2"
W4'
W4
W4"
W1
W1'
D3
D4
H
H3
H2
H1
Front
Back
The garment size is M
Fitting easy for waist circumference: 2cm
Fitting easy for hips circumference: 4cm
Garment length: 60 cm (23 5/8 in)
B
B2
B1



Garments Developed from a Basic Skirt Block

1. Straight skirt.
2. Pencil skirt.
3. A-line skirt.
4. Panelled skirt.
5. Flared skirt.
6. Gored skirt.
7. Circular-style skirts after appropriate pattern adaptation.

9.3 DRAFTING A BASIC SLEEVE BLOCK

Meaning of a Sleeve Block

A sleeve block is a basic pattern used to develop sleeves of different designs and lengths.

It is designed to fit into the armhole of a bodice block.

Parts of a Sleeve Block

1. Sleeve cap.
2. Sleeve head.
3. Front sleeve line.
4. Back sleeve line.
5. Sleeve underarm seam.
6. Elbow line.
7. Wrist line.
8. Sleeve hemline.
9. Grainline.

Measurements Required

1. Sleeve length.
2. Upper-arm circumference.
3. Elbow circumference, where required.
4. Wrist circumference.
5. Armhole measurements from the bodice block.

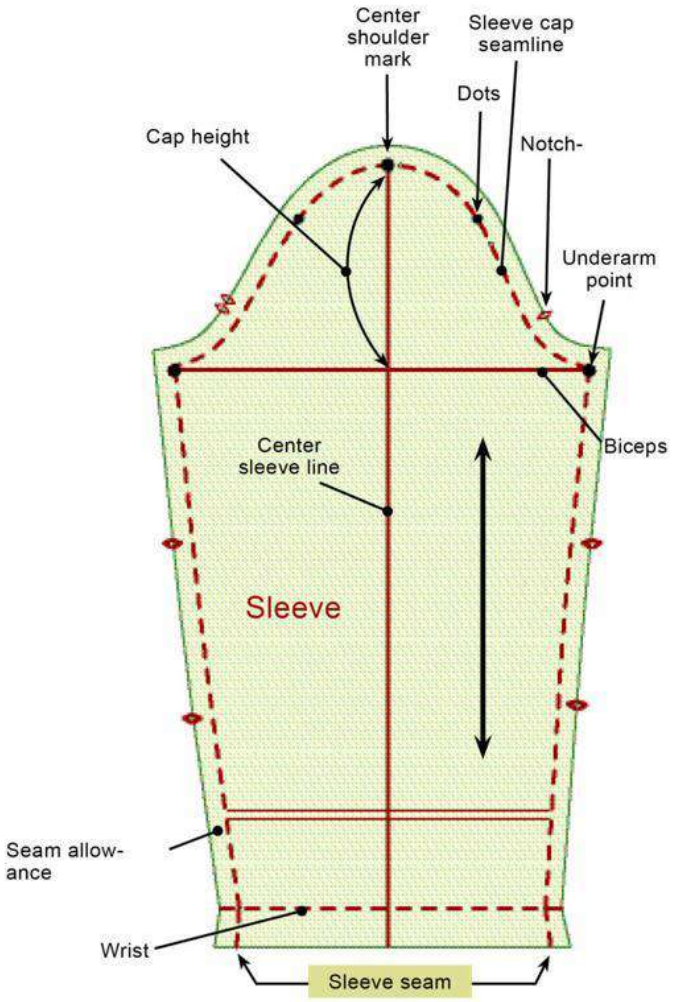
Importance of a Sleeve Block

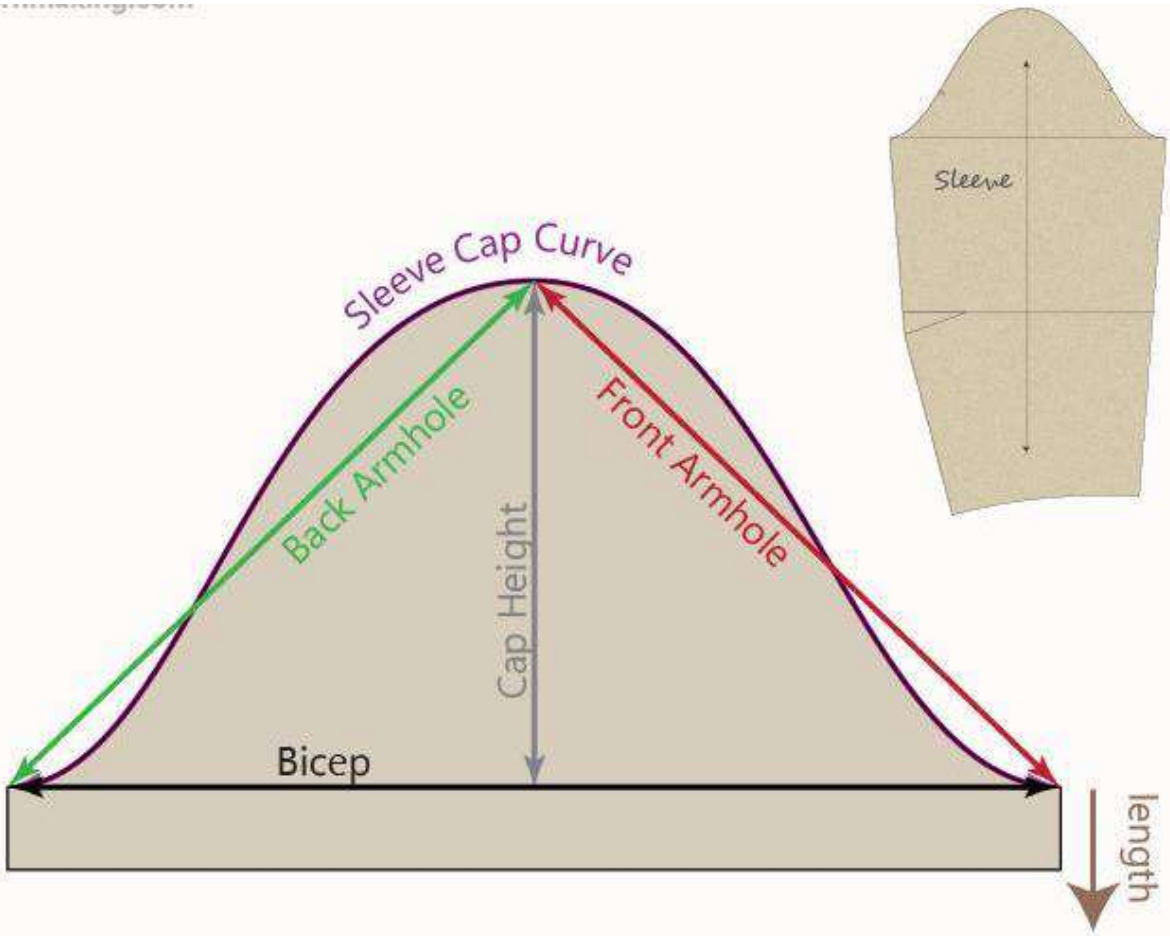
- Provides a foundation for developing different sleeves.
- Helps ensure that sleeves fit correctly into bodice armholes.
- Helps achieve freedom of movement.
- Makes it easier to develop short and long sleeves.
- Promotes accurate garment construction.

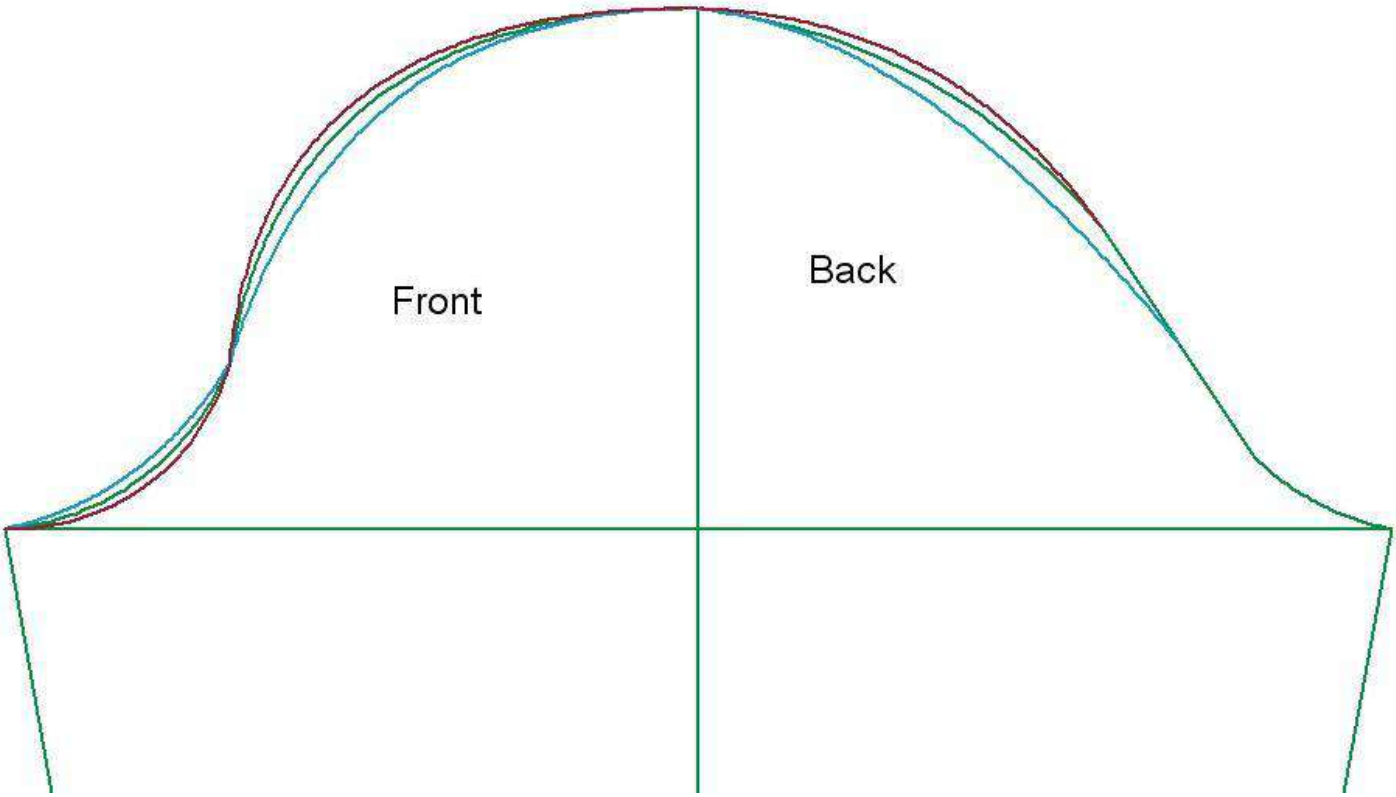
General Drafting Procedure

1. Prepare pattern paper.
2. Establish the sleeve length.
3. Mark the sleeve cap height according to the drafting method.
4. Draw the horizontal upper-arm line.
5. Determine the required sleeve width.
6. Develop the front sleeve cap.

7. Develop the back sleeve cap.
8. Shape the underarm seams.
9. Mark the elbow level if required.
10. Mark the wrist or sleeve opening.
11. Join the sleeve edges.
12. Add the grainline.
13. Add notches to distinguish the front and back sleeve sections.
14. Check that the sleeve cap is compatible with the bodice armhole.




Sleeve
Sleeve Cap Curve
Back Armhole
Front Armhole
Cap Height
Bicep
length


Front
Back

Types of Sleeves Developed from a Sleeve Block

1. Set-in sleeve.
2. Puff sleeve.
3. Bell sleeve.
4. Bishop sleeve.
5. Gathered sleeve.
6. Short sleeve.
7. Three-quarter sleeve.
8. Long sleeve.
9. Leg-of-mutton sleeve.
10. Flutter sleeve.

9.4 DRAFTING A BASIC SHORTS BLOCK

Meaning of a Shorts Block

A shorts block is a basic garment pattern used to develop shorts of different lengths and designs.

It consists of front and back pattern pieces and is designed to fit around the waist, hips, seat and crotch.

Parts of a Shorts Block

1. Front shorts section.
2. Back shorts section.
3. Waistline.
4. Hipline.
5. Crotch line.
6. Crotch curve.
7. Side seam.
8. Inside leg seam.
9. Hemline.
10. Grainline.

Measurements Required

1. Waist circumference.
2. Hip circumference.
3. Seat circumference, where separately required.
4. Crotch depth.
5. Shorts length.
6. Crotch extension.

7. Thigh circumference.

Importance of a Shorts Block

- Provides a foundation for making shorts.
- Helps achieve proper fitting around the waist and hips.
- Ensures sufficient room around the crotch.
- Promotes comfort when walking and sitting.
- Helps develop different shorts designs.

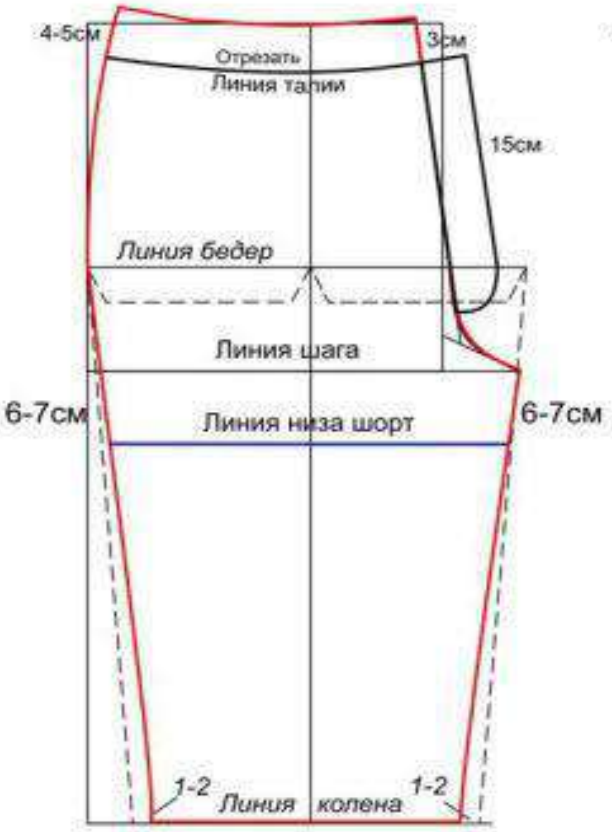
General Drafting Procedure

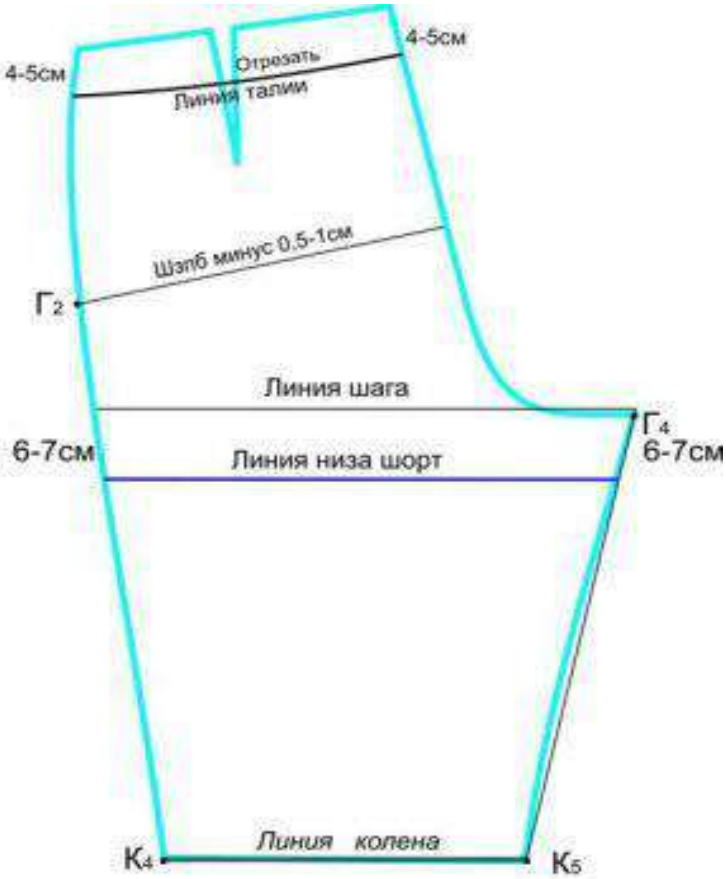
A. Front shorts

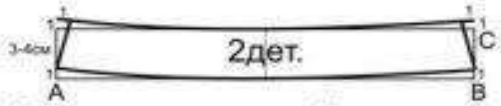
1. Prepare the pattern paper.
2. Draw a vertical reference line.
3. Mark the required shorts length.
4. Draw the waistline and hemline.
5. Mark the hipline.
6. Mark the crotch depth.
7. Apply the required waist measurement.
8. Determine the front crotch extension.
9. Draw the front crotch curve.
10. Shape the side seam.
11. Shape the inside leg seam.
12. Complete the hemline.
13. Add the grainline and other markings.

B. Back shorts

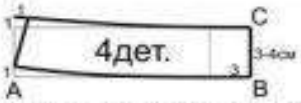
1. Draw the centre-back reference line.
2. Mark the required shorts length.
3. Draw the waistline, hipline and crotch line.
4. Apply the required hip and seat measurements.
5. Determine the back crotch extension.
6. Develop the back crotch curve.
7. Shape the side seam.
8. Shape the inside leg seam.
9. Complete the hemline.
10. Add the required pattern markings.



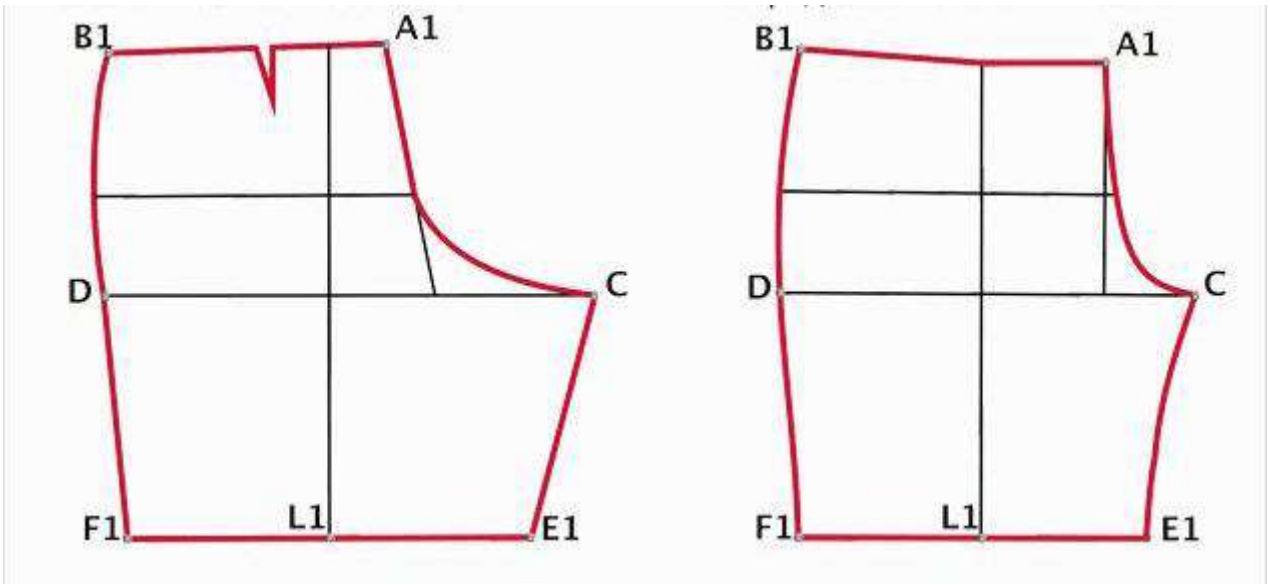


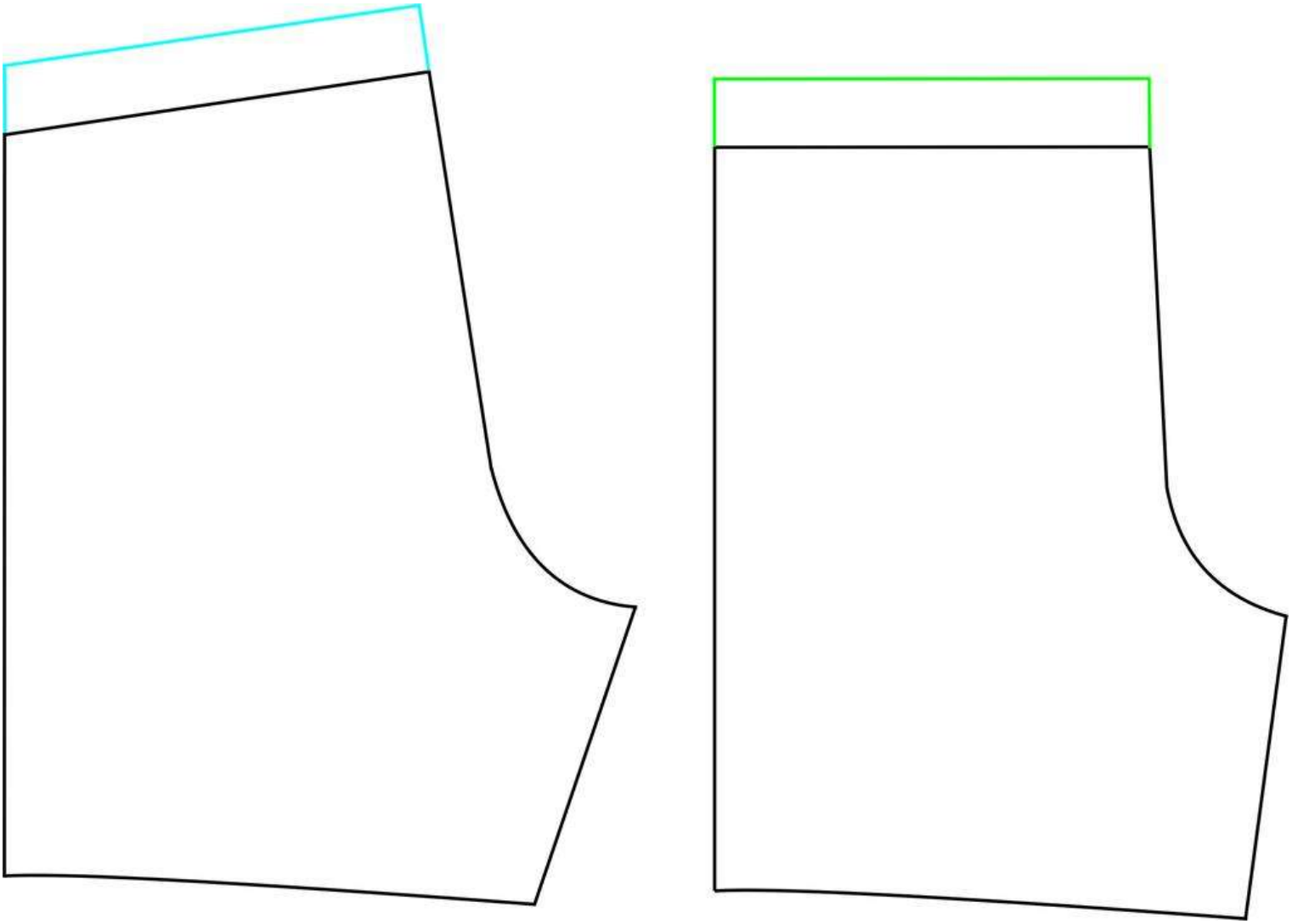


АВ - Длина талевого среза задней половинки шорт



АВ - ½ длины талевого среза передней половинки шорт+ 3см на застежку





Garments Developed from a Shorts Block

1. School sports shorts.
2. Casual shorts.
3. Bermuda shorts.
4. Children's shorts.
5. Elastic-waist shorts.
6. Tailored shorts.

10.0 PATTERN ALTERATION

10.1 Meaning of Pattern Alteration

Pattern alteration is the process of adjusting an existing pattern to change its dimensions or shape so that it fits a particular person's body or achieves a desired garment design.

It is done before cutting the final fabric to ensure that the finished garment has the correct fit and appearance.

10.2 Reasons for Pattern Alteration

1. To accommodate individual body differences.
2. To increase or reduce garment length.
3. To increase or reduce garment width.

4. To correct fitting problems.
5. To accommodate body proportions.
6. To improve comfort.
7. To adjust the position of darts.
8. To modify the neckline or armhole.
9. To change garment style.
10. To achieve a more attractive appearance.

10.3 Common Pattern Alterations

A. Lengthening a pattern

This involves increasing the vertical dimension of a pattern.

Examples:

- Lengthening a skirt.
- Lengthening sleeves.
- Increasing bodice length.
- Increasing shorts length.

Procedure:

1. Identify the lengthen/shorten line.
2. Cut across the line where appropriate.
3. Separate the sections by the required amount.
4. Insert additional pattern paper.
5. Secure the paper using masking tape.
6. Redraw the edges smoothly.
7. Check that the pattern remains balanced.

B. Shortening a pattern

This involves reducing the vertical dimension of a pattern.

Procedure:

1. Identify the alteration line.
2. Fold the pattern along the designated line.
3. Overlap the sections by the required amount.
4. Secure the fold.
5. Redraw any affected edges.
6. Check the pattern measurements.

C. Widening a pattern

This involves increasing the horizontal dimensions of a pattern.

It may be required when the garment is too tight around the bust, waist, hips or sleeves.

D. Narrowing a pattern

This involves reducing the horizontal dimensions of a pattern.

It may be required when the garment is too loose.

E. Adjusting a dart

This involves changing the position, length or intake of a dart to improve garment fitting.

11.0 PATTERN GRADING

11.1 Meaning of Pattern Grading

Pattern grading is the systematic process of increasing or decreasing the dimensions of a basic garment pattern to produce different sizes while maintaining the original design, shape and proportions.

It enables a garment maker or manufacturer to produce garments in different sizes from one basic pattern.

For example, a skirt pattern may be graded to produce sizes 8, 10, 12, 14 and 16, depending on the sizing system being used.

11.2 Importance of Pattern Grading

1. **Produces different garment sizes:** It allows the same design to be produced in several sizes.

2. **Supports mass production:** Manufacturers can produce clothing for many customers using graded patterns.

3. **Saves time:** It reduces the need to draft a completely new pattern for every size.

4. **Maintains design consistency:** It preserves the original design across different sizes.

5. **Improves market accessibility:** Customers with different body sizes can access similar garment styles.

6. **Promotes efficiency:** It makes garment production more organised.

7. **Reduces production costs:** It reduces repeated drafting work.

8. **Promotes accurate fitting:** Proper grading maintains the intended proportions of the garment.

9. **Supports commercial clothing production:** It is important in clothing industries and uniform manufacturing.

10. **Encourages entrepreneurship:** It helps small tailoring businesses serve customers with different measurements.

11.3 Types of Pattern Grading

A. Manual pattern grading

This is the process of increasing or decreasing pattern dimensions using manual tools and techniques.

Tools include:

- Rulers.
- Measuring tape.

- Pencils.
- Pattern paper.
- Set squares.
- Grading rulers.
- Pins.
- Masking tape.

Advantages:

1. It is relatively inexpensive.
2. It does not require specialised computer software.
3. It helps learners understand pattern construction.
4. It is suitable for small-scale tailoring businesses.
5. It develops practical measurement skills.

Disadvantages:

1. It can be time-consuming.
2. It requires high accuracy.
3. Errors may occur during repeated measurements.
4. It may be difficult when producing many sizes.
5. It requires skilled personnel.

B. Computerised pattern grading

This involves using specialised computer software to enlarge or reduce garment patterns.

The software uses predetermined grading rules to produce different pattern sizes.

Examples of computer-aided design applications include professional garment CAD systems.

Advantages:

1. It is faster than manual grading.
2. It can produce several sizes accurately.
3. It allows easy storage of patterns.
4. It makes it easier to modify designs.
5. It supports large-scale garment production.
6. It reduces repeated manual work.

Disadvantages:

1. It requires computers and specialised software.
2. It may be expensive to establish.
3. Users require computer skills and training.

4. Technical problems may interrupt production.
5. Incorrect grading rules can produce poorly fitting garments.

11.4 Basic Principles of Pattern Grading

When grading patterns, the following principles should be observed:

1. Maintain the original garment design.
2. Use accurate body measurement charts.
3. Apply consistent size increments.
4. Increase or decrease the pattern at appropriate grading points.
5. Maintain the correct proportions of the garment.
6. Ensure that front and back pattern pieces remain compatible.
7. Maintain the correct shape of armholes and necklines.
8. Check that seams match after grading.
9. Maintain correct grainline positions.
10. Recheck the measurements of every graded size.

11.5 Pattern Grading Points

Grading points are specific positions on a pattern where measurements are increased or decreased to produce different sizes.

Common grading points include:

- Centre front.
- Centre back.
- Shoulder points.
- Bustline.
- Waistline.
- Hipline.
- Armhole.
- Sleeve width.
- Sleeve length.
- Crotch line.
- Hemline.

11.6 Difference Between Pattern Alteration and Pattern Grading

Pattern alteration	Pattern grading
Adjusts a pattern to fit an individual or achieve a desired change.	Produces different sizes from a basic pattern.
Usually addresses specific fitting requirements.	Uses systematic size increments.
May change the style or dimensions of a pattern.	Maintains the original style and proportions.

Often produces one customised pattern.	Produces a range of patterns in different sizes.
Example: lengthening a skirt for one customer.	Example: producing skirt patterns in sizes 10, 12, 14 and 16.

12.0 GRADING BASIC PATTERN BLOCKS

12.1 Grading a Pattern One Size Up

This means increasing the dimensions of a basic pattern to produce the next larger size.

For example:

- Size 10 to size 12.
- Size 12 to size 14.

The actual measurement increase depends on the sizing chart being followed.

General Procedure

1. Prepare the original pattern block.
2. Obtain the body measurement chart for the next size.
3. Identify the differences between the original and required measurements.
4. Mark the grading points.
5. Calculate the required increases.
6. Transfer the increases to the appropriate pattern sections.
7. Redraw the pattern outlines smoothly.
8. Check the relationship between front and back pieces.
9. Mark the new grainline and pattern details where necessary.
10. Label the new pattern size.
11. Check the final measurements.

12.2 Grading a Pattern One Size Down

This means reducing the dimensions of a basic pattern to produce the next smaller size.

For example:

- Size 16 to size 14.
- Size 14 to size 12.

General Procedure

1. Prepare the original pattern block.
2. Obtain the measurement chart for the smaller size.
3. Determine the measurement differences.
4. Identify the relevant grading points.
5. Calculate the required reductions.
6. Transfer the reductions to the pattern.

7. Redraw the pattern outlines smoothly.
8. Check all seams and joining points.
9. Label the new size.
10. Verify the measurements.

12.3 Practical Example of Pattern Grading

Suppose a basic skirt pattern is developed using the following waist measurements:

- Original size: 72 cm.
- Next size: 76 cm.

Difference:

76–72=4 cm76–72=4 cm

The overall waist circumference must increase by 4 cm.

If the increase is distributed equally among the four corresponding quarter-waist sections:

4÷4=1 cm4÷4=1 cm

Each quarter-waist section increases by 1 cm.

Important: This is a simplified teaching example. Actual grading must also account for the hip measurement, darts, side seams, pattern balance and the grading rules of the selected sizing system.

12.4 Differences Between Grading One Size Up and One Size Down

One size up	One size down
Increases pattern dimensions.	Reduces pattern dimensions.
Produces a larger garment size.	Produces a smaller garment size.
Uses positive measurement increments.	Uses negative measurement increments.
Adds width and/or length where required.	Removes width and/or length where required.
Example: size 12 to size 14.	Example: size 14 to size 12.

13.0 SAFETY PRECAUTIONS WHEN DRAFTING AND GRADING PATTERNS

Safety is important when handling drafting tools and equipment to prevent injuries, accidents and damage to materials.

13.1 Safety Precautions

1. **Handle scissors carefully:** Always cut away from the body to prevent injuries.

2. **Store sharp tools properly:** Keep scissors, pins, tracing wheels and other sharp tools in appropriate containers.

3. **Use the correct scissors:** Use paper scissors for pattern paper and fabric scissors for fabric.

4. **Keep the working area clean:** Remove unnecessary materials to prevent accidents.

5. **Avoid leaving pins scattered:** Collect pins immediately after use.

6. **Use rulers correctly:** Ensure that rulers are stable when drawing lines.

7. **Maintain good posture:** Sit or stand comfortably to avoid body strain.

8. **Ensure adequate lighting:** Good lighting reduces eye strain and drafting errors.

9. **Avoid playing with tools:** Drafting equipment should be used responsibly.

10. **Keep electrical equipment safe:** When using computerised grading systems, ensure that electrical cables are properly arranged.

11. **Avoid sharp tool misuse:** Do not use tracing wheels or awls carelessly.

12. **Store patterns safely:** Keep completed patterns in envelopes or files to prevent damage.

13. **Keep liquids away from equipment:** This prevents damage to paper patterns and electrical devices.

14. **Observe personal hygiene:** Wash hands after practical activities, especially when using chalk and marking materials.

13.2 Common Accidents and Their Prevention

Possible accident	Prevention
Cuts from scissors	Handle scissors carefully and store safely.
Pricks from pins	Keep pins in a pin cushion.
Eye strain	Work in a well-lit area.
Back pain	Maintain correct working posture.
Slipping and falling	Keep the floor and working area tidy.
Electrical shock	Handle electrical equipment correctly.
Damage to patterns	Store patterns in labelled envelopes.

14.0 APPLICATION OF PATTERN BLOCKS IN CLOTHING CONSTRUCTION

14.1 Meaning of Application of Pattern Blocks

Application of pattern blocks refers to the use of basic drafted patterns as foundations for designing, cutting and constructing different garments.

A basic pattern block can be modified by introducing style features while maintaining the required fit and garment proportions.

14.2 Examples of Applications

Basic pattern block	Garments developed
Bodice block	Blouses, shirts, dresses and jackets.
Skirt block	Straight, pencil, A-line and flared skirts.
Sleeve block	Puff, bell, bishop and short sleeves.
Shorts block	Sports shorts, casual shorts and Bermuda shorts.

14.3 How Pattern Blocks Are Used to Create New Designs

1. Select the appropriate basic block.
2. Identify the desired garment style.
3. Study the design requirements.
4. Modify the basic pattern according to the design.

5. Add the required style features.
6. Transfer the modified pattern to fresh pattern paper.
7. Add the necessary markings.
8. Check the pattern measurements.
9. Prepare the pattern for fabric cutting.
10. Construct the garment using appropriate sewing techniques.

14.4 Examples of Pattern Modifications

A. Bodice block modifications

- Changing the neckline.
- Adding a collar.
- Adding gathers.
- Changing dart positions.
- Adding princess seams.
- Adding buttons and buttonholes.

B. Skirt block modifications

- Adding pleats.
- Adding gathers.
- Creating an A-line shape.
- Adding panels.
- Adding a waistband.
- Creating a flared design.

C. Sleeve block modifications

- Increasing sleeve fullness.
- Adding gathers.
- Creating puff sleeves.
- Creating bell sleeves.
- Changing sleeve length.

D. Shorts block modifications

- Changing shorts length.
- Adding pockets.
- Adding waistband features.
- Adding pleats.
- Creating elasticated waistbands.

15.0 CARE AND STORAGE OF PATTERN BLOCKS

Pattern blocks should be stored correctly to maintain their accuracy and allow reuse.

15.1 Guidelines for Caring for Pattern Blocks

1. Store patterns in labelled envelopes.
2. Keep patterns away from moisture.
3. Avoid folding patterns unnecessarily.
4. Store patterns in a dry and clean place.
5. Label each pattern with its name and size.
6. Avoid tearing pattern edges.
7. Keep patterns away from direct sunlight.
8. Store different garment patterns separately.
9. Keep patterns flat where possible.
10. Repair minor damage using suitable paper and masking tape.

15.2 Importance of Proper Pattern Storage

1. Prevents damage.
2. Extends the useful life of patterns.
3. Makes patterns easy to retrieve.
4. Maintains pattern accuracy.
5. Reduces replacement costs.
6. Promotes organised working practices.

16.0 PRACTICAL LEARNING ACTIVITIES

The following practical activities can be undertaken by Grade 11 learners in a Home Science workshop.

Activity 1: Identifying Commercial Pattern Markings

Requirements:

- Commercial pattern.
- Pattern envelope.
- Notebook.
- Pencil.

Procedure:

1. Obtain a commercial pattern.
2. Examine its pattern pieces.
3. Identify the grainline.
4. Identify the place-on-fold marking.

5. Identify cutting and stitching lines.
6. Identify darts and notches.
7. Identify the centre-front and centre-back lines.
8. Record the function of each marking.

Expected learning outcome: The learner identifies and interprets different commercial pattern markings.

Activity 2: Taking Body Measurements

Requirements:

- Measuring tape.
- Notebook.
- Pen.
- Measurement recording sheet.

Procedure:

1. Work in pairs.
2. Obtain consent from the partner.
3. Identify the required body points.
4. Take bust, chest, waist and hip measurements.
5. Take shoulder and across-back measurements.
6. Take sleeve and skirt-length measurements.
7. Take shorts-length and crotch-depth measurements.
8. Record the measurements.
9. Repeat selected measurements to confirm accuracy.

Expected learning outcome: The learner takes and records accurate body measurements.

Activity 3: Drafting a Basic Bodice Block

Requirements:

- Pattern paper.
- Measuring tape.
- Ruler.
- French curve.
- Pencil.
- Eraser.

Procedure:

1. Collect the required body measurements.
2. Prepare the pattern paper.

3. Draft the back bodice.
4. Draft the front bodice.
5. Mark the neckline and armhole.
6. Mark the bust and waist darts.
7. Draw the grainline.
8. Indicate cutting and stitching lines.
9. Label the pattern pieces.

Expected learning outcome: The learner drafts a basic bodice block.

Activity 4: Drafting a Basic Skirt Block

Requirements:

- Pattern paper.
- Measuring tape.
- Ruler.
- French curve.
- Pencil.

Procedure:

1. Obtain waist and hip measurements.
2. Obtain skirt length.
3. Draft the front skirt.
4. Draft the back skirt.
5. Mark the waist darts.
6. Shape the hip and side seams.
7. Add the required pattern markings.
8. Check the measurements.

Expected learning outcome: The learner drafts a basic skirt block.

Activity 5: Pattern Grading

Requirements:

- Existing basic pattern block.
- Pattern paper.
- Ruler.
- Pencil.
- Measuring tape.
- Masking tape.

Procedure:

1. Select a basic pattern block.
2. Obtain the next-size measurement chart.
3. Determine the measurement differences.
4. Identify the grading points.
5. Increase the dimensions to produce one size up.
6. Repeat to produce one size down.
7. Label the different pattern sizes.
8. Compare the graded patterns.

Expected learning outcome: The learner grades basic pattern blocks one size up and one size down.

17.0 KEY TERMS AND DEFINITIONS

Term	Meaning
Pattern	A template used to cut fabric into garment shapes.
Pattern block	A basic fitted pattern used to develop garment designs.
Pattern drafting	Drawing garment patterns using body measurements.
Pattern grading	Increasing or decreasing pattern dimensions to produce different sizes.
Commercial pattern	A ready-made pattern produced for sale or distribution.
Grainline	A line showing the direction in which a pattern is positioned on fabric.
Notch	A small mark used to match corresponding pattern sections.
Dart	A stitched wedge used to shape fabric around the body.
Seam allowance	Extra fabric beyond the stitching line for joining garment sections.
Stitching line	The line along which stitches are made.
Cutting line	The line along which fabric is cut.
Place-on-fold	A marking showing where a pattern is placed along folded fabric.
Armhole	The opening in a garment into which a sleeve is fitted.
Bodice	The upper part of a garment covering the torso.
Sleeve block	A basic pattern used to develop sleeves.
Skirt block	A basic pattern used to develop skirts.
Shorts block	A basic pattern used to develop shorts.
Pattern alteration	Adjusting a pattern to achieve a desired size, fit or design.
Crotch depth	The vertical distance from the waist to the crotch level when seated.
Across-back measurement	The horizontal distance across the upper back.
Waistline	The line corresponding to the natural waist.
Hipline	The reference line around the hip level.
French curve	A curved ruler used to draw smooth pattern outlines.
Tracing wheel	A tool used to transfer pattern markings.

PART TWO: GRADE 11 HOMESCIENCE REVISION QUESTIONS

Total: 80 Marks

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.2: PATTERN BLOCKS AND PATTERN GRADING

Instructions to learners:

1. Answer all questions.
2. Section A contains 30 multiple-choice questions.
3. Section B contains structured questions totalling 50 marks.
4. Choose the most appropriate answer in Section A.
5. Write clear and well-organised answers in Section B.

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Choose the correct answer from the alternatives A, B, C and D.

1. What is a pattern in clothing construction?

A. A decorative design printed on fabric.

B. A template used to cut fabric into garment shapes.

C. A machine used to join fabric pieces.

D. A method of washing garments.

2. A basic pattern block is best described as:

A. A finished garment ready for sale.

B. A decorative fabric design.

C. A foundation pattern used to develop different garment styles.

D. A sewing machine attachment.

3. Which of the following is the main purpose of pattern grading?

A. To decorate garment pieces.

B. To produce different garment sizes from a basic pattern.

C. To wash fabric before sewing.

D. To remove stains from garments.

4. A grainline on a commercial pattern indicates:

A. The position of buttons.

B. The direction in which the pattern should be placed on fabric.

C. The position of a garment pocket.

D. The length of a garment.

5. Which pattern marking indicates that a pattern piece should be placed along a folded edge of fabric?

A. Notch.

B. Dart.

C. Place-on-fold line.

D. Buttonhole marking.

6. The main function of notches on commercial patterns is to:

A. Decorate garment edges.

B. Help match corresponding pattern pieces.

C. Increase garment length.

D. Indicate fabric colour.

7. Which of the following is used to draw smooth curves when drafting a pattern?

A. French curve.

B. Paper scissors.

C. Measuring tape.

D. Pin cushion.

8. Which measurement is taken around the fullest part of the bust?

A. Shoulder measurement.

B. Sleeve measurement.

C. Bust measurement.

D. Skirt measurement.

9. Which measurement is essential when drafting a basic skirt block?

A. Sleeve length.

B. Waist circumference.

C. Shoulder width.

D. Neck circumference.

10. The measurement taken from the natural waistline to the desired bottom edge of a skirt is called:

A. Bust depth.

B. Crotch depth.

C. Skirt length.

D. Across-back measurement.

11. Which tool is most suitable for taking body measurements?

A. Straight ruler.

B. Measuring tape.

C. Paper scissors.

D. Tracing wheel.

12. Which of the following is an important guideline when taking body measurements?

A. Pull the tape tightly around the body.

B. Measure over thick clothing.

C. Keep the tape horizontal when taking circumference measurements.

D. Ask the person to bend continuously.

13. A dart is mainly used to:

A. Decorate a fabric surface.

B. Shape a garment to follow the body's contours.

C. Cut the fabric into strips.

D. Increase the width of a garment.

14. Which pattern block is used as a foundation for developing blouses and dresses?

A. Sleeve block.

B. Shorts block.

C. Bodice block.

D. Skirt block.

15. Which measurement is particularly important when drafting shorts?

A. Crotch depth.

B. Neck circumference.

C. Across-back measurement.

D. Sleeve length.

16. The main function of a sleeve block is to:

A. Develop skirt designs.

B. Develop different sleeve designs.

C. Construct waistbands.

D. Develop trouser pockets.

17. Which of the following is a commercial pattern marking?

A. Grainline.

B. Fabric colour.

C. Garment price.

D. Washing temperature only.

18. The extra fabric beyond the stitching line is known as:

A. Grain allowance.

B. Seam allowance.

C. Dart allowance.

D. Design allowance.

19. Which tool is used to transfer pattern markings from one paper surface to another?

A. Tracing wheel.

B. French curve.

C. Tape measure.

D. Set square.

20. Which of the following is an example of pattern alteration?

A. Producing sizes 10, 12 and 14.

B. Lengthening a skirt pattern to suit an individual.

C. Printing a commercial pattern.

D. Washing a finished skirt.

21. What should be done before drafting a basic bodice block?

A. Cut the final fabric immediately.

B. Collect the required body measurements.

C. Wash the finished garment.

D. Attach buttons.

22. Which part of a bodice block helps shape the garment around the bust?

A. Grainline.

B. Bust dart.

C. Hemline.

D. Buttonhole.

23. Which of the following is a correct safety precaution when using scissors?

A. Leave them open on the floor.

B. Pass them with blades pointing towards another person.

C. Cut away from the body.

D. Use fabric scissors to sharpen pins.

24. Which type of pattern grading uses specialised computer software?

A. Manual grading.

B. Computerised grading.

C. Hand stitching.

D. Pattern tracing.

25. Which of the following is an advantage of commercial patterns?

A. They always fit every person perfectly.

B. They provide ready-prepared pattern pieces and instructions.

C. They eliminate the need for measurements.

D. They cannot be reused.

26. The line showing where stitches should be made is called the:

A. Cutting line.

B. Grainline.

C. Stitching line.

D. Fold line.

27. Which of the following is an appropriate way to store completed pattern blocks?

A. Leaving them on the floor.

B. Keeping them in labelled envelopes.

C. Storing them in a wet room.

D. Folding them carelessly.

28. A learner grades a skirt pattern from size 12 to size 14. This means that the learner is:

A. Reducing the pattern dimensions.

B. Increasing the pattern dimensions according to the size chart.

C. Changing the fabric colour.

D. Removing the waistline.

29. Which measurement is taken across the upper back between the back armhole reference points?

A. Sleeve length.

B. Across-back measurement.

C. Crotch depth.

D. Skirt length.

30. A learner wants to develop a puff sleeve from a basic sleeve block. Which process is most appropriate?

A. Pattern modification.

B. Fabric bleaching.

C. Garment pressing.

D. Pattern labelling only.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer all questions.

QUESTION 31: INTRODUCTION TO PATTERN BLOCKS (8 MARKS)

a) Define the term pattern block. (2 marks)

b) State four importance of pattern blocks in clothing construction. (4 marks)

c) State two examples of garments that can be developed from a bodice block. (2 marks)

QUESTION 32: COMMERCIAL PATTERNS AND MARKINGS (8 MARKS)

a) Define a commercial pattern. (2 marks)

b) State three pattern markings found on commercial patterns and explain the function of each. (3 marks)

c) Explain three reasons why it is important to interpret pattern markings correctly before cutting fabric. (3 marks)

QUESTION 33: BODY MEASUREMENTS (8 MARKS)

a) State four guidelines to observe when taking body measurements. (4 marks)

b) Explain the procedure for taking a waist measurement. (2 marks)

c) State two uses of crotch depth measurement in clothing construction. (2 marks)

QUESTION 34: PATTERN DRAFTING (8 MARKS)

a) Define pattern drafting. (2 marks)

b) Name three tools used when drafting basic pattern blocks. (3 marks)

c) Explain three steps followed when drafting a basic skirt block. (3 marks)

QUESTION 35: PATTERN GRADING (9 MARKS)

a) Define pattern grading. (2 marks)

b) Differentiate between manual and computerised pattern grading. (3 marks)

c) Explain four principles to observe when grading basic pattern blocks. (4 marks)

QUESTION 36: APPLICATION AND SAFETY (9 MARKS)

a) State three ways in which a basic sleeve block can be modified to develop different sleeve designs. (3 marks)

b) Explain three safety precautions to observe when drafting and grading patterns. (3 marks)

c) State three reasons for proper storage of drafted pattern blocks. (3 marks)

SECTION B TOTAL: 50 MARKS

PART THREE: ANSWER GUIDE AND MARKING SCHEME

SECTION A: MULTIPLE-CHOICE ANSWERS

Question	Answer	Question	Answer
1	B	16	B
2	C	17	A
3	B	18	B
4	B	19	A
5	C	20	B
6	B	21	B
7	A	22	B
8	C	23	C
9	B	24	B
10	C	25	B
11	B	26	C
12	C	27	B
13	B	28	B
14	C	29	B
15	A	30	A

SECTION B: MARKING SCHEME

QUESTION 31: INTRODUCTION TO PATTERN BLOCKS (8 MARKS)

a) A pattern block is a basic fitted garment pattern developed using body measurements and used as a foundation for creating different garment designs. (2 marks)

b) Importance of pattern blocks:

1. Provide a foundation for garment designing.
2. Improve garment fitting.
3. Reduce fabric wastage.
4. Save time during garment production.
5. Promote accuracy.
6. Encourage creativity.
7. Support mass production.
8. Reduce construction errors.

Award 1 mark for each correct point, any four. (4 marks)

c) Examples:

1. Blouses.
2. Dresses.
3. Shirts.
4. Jackets.

Award 1 mark each, any two. (2 marks)

QUESTION 32: COMMERCIAL PATTERNS AND MARKINGS (8 MARKS)

a) A commercial pattern is a ready-made garment pattern produced by a manufacturer or pattern-making company for sale or distribution to garment makers. (2 marks)

b) Pattern markings and their functions:

- Grainline – indicates the direction in which the pattern should be positioned on fabric.
- Place-on-fold – indicates where the pattern should be placed along folded fabric.
- Cutting line – indicates where fabric should be cut.
- Stitching line – indicates where sewing should be done.
- Notches – help match corresponding garment sections.
- Dart markings – indicate where fabric should be folded and stitched.

Award 1 mark for each correct marking and function, any three. (3 marks)

c) Importance of interpreting markings correctly:

1. Ensures accurate fabric cutting.
2. Prevents incorrect joining of garment pieces.
3. Ensures proper garment fitting.
4. Prevents unnecessary fabric wastage.
5. Promotes correct positioning of pattern pieces.
6. Maintains garment balance and appearance.

Award 1 mark each, any three. (3 marks)

QUESTION 33: BODY MEASUREMENTS (8 MARKS)

a) Guidelines:

1. Use an accurate measuring tape.
2. Ensure the person stands naturally.
3. Avoid tightening the tape.
4. Keep the tape level.
5. Wear suitable undergarments.
6. Record measurements immediately.
7. Repeat measurements to confirm accuracy.
8. Use consistent units.

Award 1 mark each, any four. (4 marks)

b) Procedure for taking waist measurement:

1. Identify the natural waistline.
2. Place the measuring tape around the natural waist.
3. Keep the tape horizontal and comfortably positioned.

4. Record the measurement.

Award 1 mark for each appropriate procedural element, maximum 2 marks.

c) Uses of crotch depth:

1. Used when drafting shorts.
2. Used when drafting trousers.
3. Helps determine the correct crotch level.
4. Ensures comfort when sitting and moving.

Award 1 mark each, any two. (2 marks)

QUESTION 34: PATTERN DRAFTING (8 MARKS)

a) Pattern drafting is the process of creating garment patterns by drawing measurements, lines, curves and shapes on pattern paper using body measurements. (2 marks)

b) Tools:

1. Measuring tape.
2. French curve.
3. Straight ruler.
4. L-square.
5. Pencil.
6. Paper scissors.
7. Tracing wheel.
8. Eraser.

Award 1 mark each, any three. (3 marks)

c) Steps:

1. Prepare pattern paper and drafting tools.
2. Obtain waist, hip and skirt-length measurements.
3. Draw the centre-front and centre-back reference lines.
4. Mark the waistline, hipline and hemline.
5. Apply the appropriate measurements.
6. Draft waist darts.
7. Shape the side seams.
8. Add pattern markings.

Award 1 mark each, any three. (3 marks)

QUESTION 35: PATTERN GRADING (9 MARKS)

a) Pattern grading is the systematic process of increasing or decreasing the dimensions of a basic pattern to produce different garment sizes while maintaining the original design and proportions. (2 marks)

b) Differences:

Manual grading:

- Uses rulers, measuring tapes, pencils and pattern paper.
- Measurements are increased or reduced manually.
- Requires manual calculations and marking.

Computerised grading:

- Uses specialised computer software.
- Patterns are enlarged or reduced digitally.
- Can produce several sizes more quickly.

Award 1 mark for each valid comparison, maximum 3 marks.

c) Principles of pattern grading:

1. Maintain the original garment design.
2. Use accurate body measurement charts.
3. Apply consistent size increments.
4. Maintain correct garment proportions.
5. Ensure seams match correctly.
6. Maintain appropriate armhole and neckline shapes.
7. Check front and back pattern compatibility.
8. Recheck all graded measurements.

Award 1 mark each, any four. (4 marks)

QUESTION 36: APPLICATION AND SAFETY (9 MARKS)

a) Sleeve block modifications:

1. Increase sleeve fullness to develop a puff sleeve.
2. Widen the lower sleeve section to develop a bell sleeve.
3. Change sleeve length to develop short or three-quarter sleeves.
4. Add gathers to develop a gathered sleeve.
5. Modify the shape to develop a bishop sleeve.

Award 1 mark each, any three. (3 marks)

b) Safety precautions:

1. Handle scissors carefully to avoid cuts.
2. Keep pins in a pin cushion to prevent injuries.
3. Maintain a clean working area to prevent accidents.
4. Use appropriate tools for each task.

5. Maintain proper posture.
6. Ensure adequate lighting.

Award 1 mark each, any three. (3 marks)

c) Importance of proper pattern storage:

1. Prevents damage.
2. Maintains pattern accuracy.
3. Makes patterns easy to retrieve.
4. Extends pattern lifespan.
5. Reduces replacement costs.
6. Promotes organisation.

Award 1 mark each, any three. (3 marks)

18.0 SUMMARY OF THE SUB-STRAND

At the end of this sub-strand, the learner should be able to:

1. Describe different markings on commercial patterns.
2. Take and record body measurements used in clothing construction.
3. Draft basic bodice pattern blocks.
4. Draft basic skirt pattern blocks.
5. Draft basic sleeve pattern blocks.
6. Draft basic shorts pattern blocks.
7. Grade basic pattern blocks one size up.
8. Grade basic pattern blocks one size down.
9. Apply pattern blocks in garment construction.
10. Observe safety when drafting and grading patterns.

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.3: CLOTHING CONSTRUCTION PROCESSES – POCKETS

1.0 Introduction to Pockets

A pocket is a small fabric compartment attached to or incorporated into a garment for holding small personal items such as money, keys, handkerchiefs, mobile phones and other accessories.

Pockets are important features in garment construction because they improve the functionality, appearance and convenience of clothing.

In Kenya, pockets are commonly found on school uniforms, trousers, shirts, dresses, skirts, jackets, coats, overalls and traditional garments.

1.1 Importance of Pockets in Clothing

Pockets serve several purposes in garments.

1. **Storage:** They provide space for carrying small personal items such as keys, coins, pens and handkerchiefs.
2. **Convenience:** They enable the wearer to access frequently used items easily.
3. **Decoration:** They improve the appearance of garments by adding attractive designs and details.
4. **Fashion:** Different pocket styles contribute to the fashion and style of a garment.
5. **Functionality:** They make garments more practical for everyday activities.
6. **Professional use:** Pockets provide storage for working tools and equipment, especially in uniforms.
7. **Organisation:** They help the wearer keep small items in separate compartments.
8. **Identification of garment style:** Particular pocket designs may distinguish one garment style from another.

Examples in the Kenyan setting:

- School shirts have chest pockets for pens and small items.
- School trousers may have side pockets for handkerchiefs.
- Safari jackets have several pockets for carrying personal belongings.
- Overalls have pockets for holding working tools.
- Dresses may have decorative or functional side pockets.

2.0 Types of Pockets Used in Clothing Construction

Pockets can be classified according to how they are constructed and attached to garments.

The two main types studied in this sub-strand are:

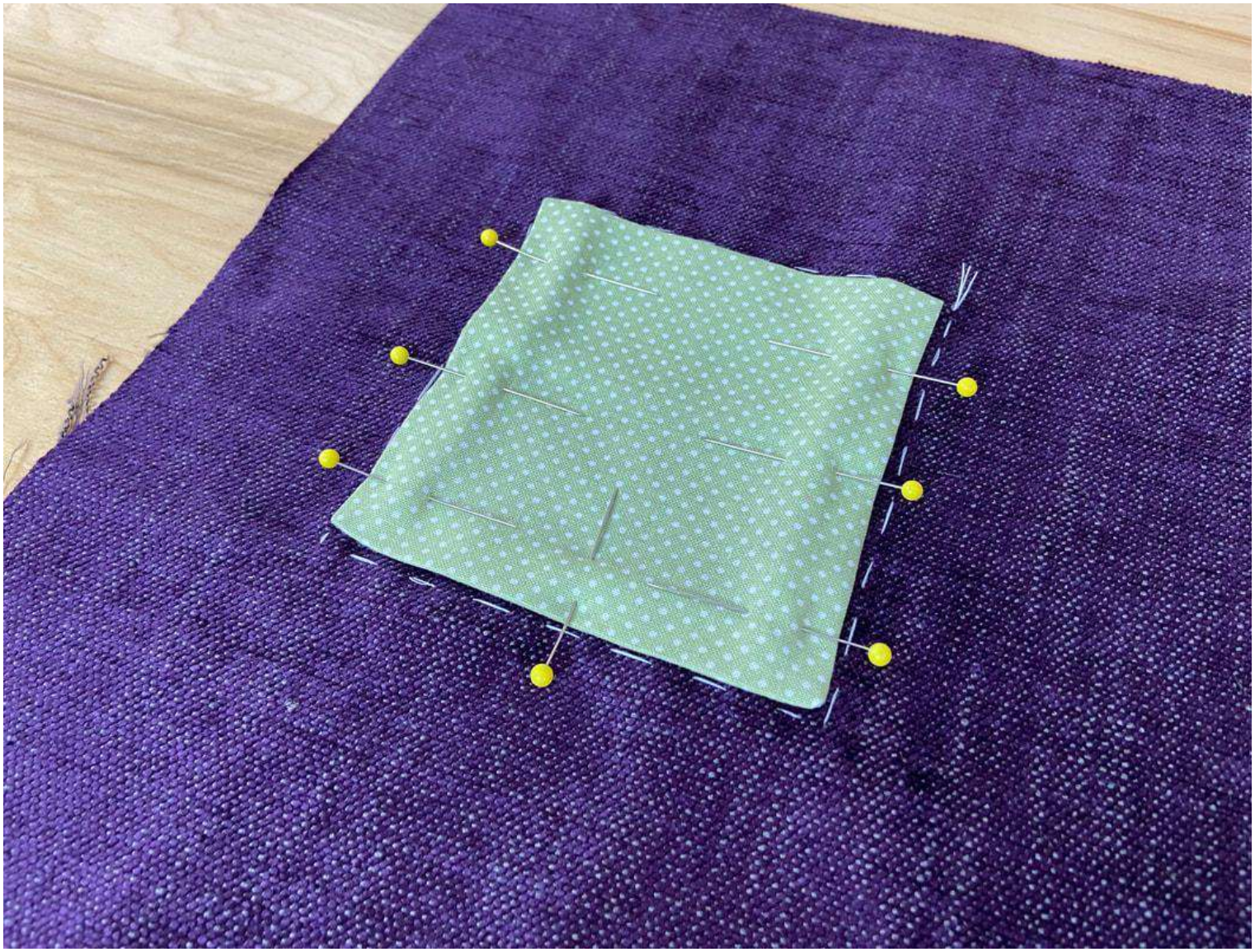
1. Patch pockets.
2. In-seam pockets.

2.1 Patch Pockets

A patch pocket is a pocket made from a separate piece of fabric that is placed on the outside of a garment and stitched along its sides and bottom edges.

The upper edge is usually left open to form the pocket mouth.

Patch pockets are commonly used on shirts, dresses, skirts, jackets, children's clothing and school uniforms.







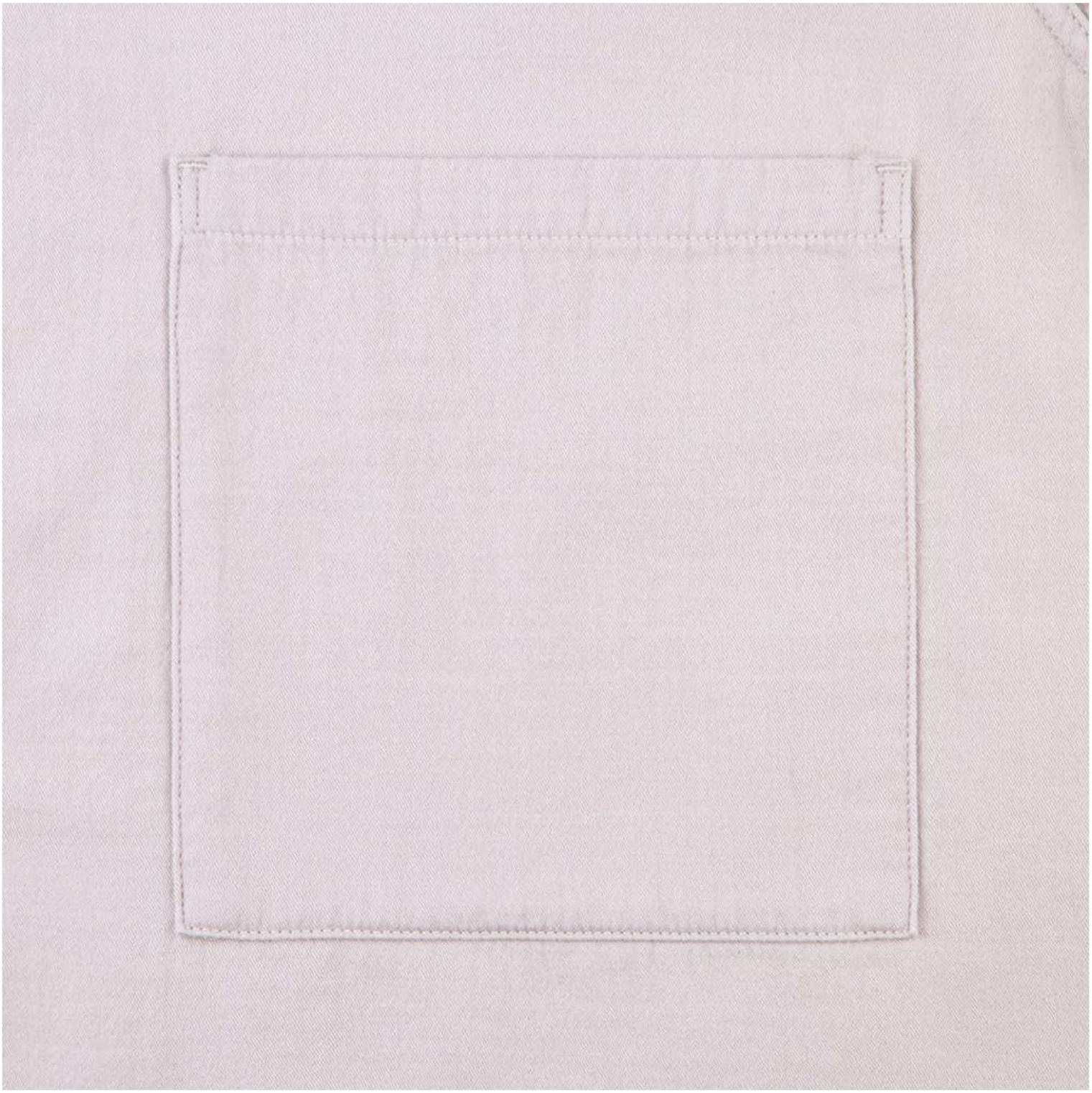
2.1.1 Characteristics of Patch Pockets

1. They are made from a separate piece of fabric.
2. They are attached to the outer surface of a garment.
3. They are visible on the finished garment.
4. Their shapes and sizes vary depending on the garment design.
5. The pocket mouth requires appropriate finishing.
6. Their edges are usually turned under before stitching.
7. They can be made using the same fabric as the garment or a contrasting fabric.
8. They can be decorated using embroidery, piping, buttons or other decorative features.

2.1.2 Common Shapes and Designs of Patch Pockets

Patch pockets can be made in different shapes to suit the design and intended use of a garment.

A. Square or rectangular patch pocket



- It has straight sides and a straight or slightly shaped bottom.
- It is one of the simplest pocket designs to construct.
- It is suitable for shirts, uniforms, aprons and workwear.
- It provides adequate storage space for small items.
- It is easy to measure, cut, fold and attach.

B. Rounded-bottom patch pocket



- It has curved lower corners or a rounded bottom.
- It gives garments a softer and more attractive appearance.
- It is commonly used on dresses, children's clothing and casual shirts.
- It requires careful shaping when turning the lower edges.
- Clipping or notching may be necessary to achieve a smooth curve, depending on the fabric and seam allowance.

C. V-shaped patch pocket



- It has a pointed lower edge forming the shape of the letter V.
- It creates a decorative appearance.
- It may be used on shirts, jackets and fashionable garments.
- The pointed bottom must be carefully shaped to achieve a neat finish.
- Accurate stitching is required to maintain the V shape.

D. Patch pocket with a flap



- It consists of a patch pocket with an additional fabric piece covering its opening.

- The flap may be pointed, rounded, rectangular or shaped.
- It can be secured using a button, press stud or hook-and-loop fastener.
- It helps prevent items from falling out.
- It adds decorative detail to the garment.
- It is common on safari shirts, jackets, military-style clothing and workwear.

2.1.3 Advantages of Patch Pockets

1. They are relatively easy to construct.
2. They require simple sewing skills.
3. They can be attached after the main garment has been assembled.
4. They are suitable for beginners learning garment construction.
5. They provide visible decorative details.
6. They can be made in different shapes and sizes.
7. They can be made using contrasting fabrics.
8. They can be repaired or replaced without dismantling major garment seams.
9. They are suitable for garments requiring additional storage space.

2.1.4 Disadvantages of Patch Pockets

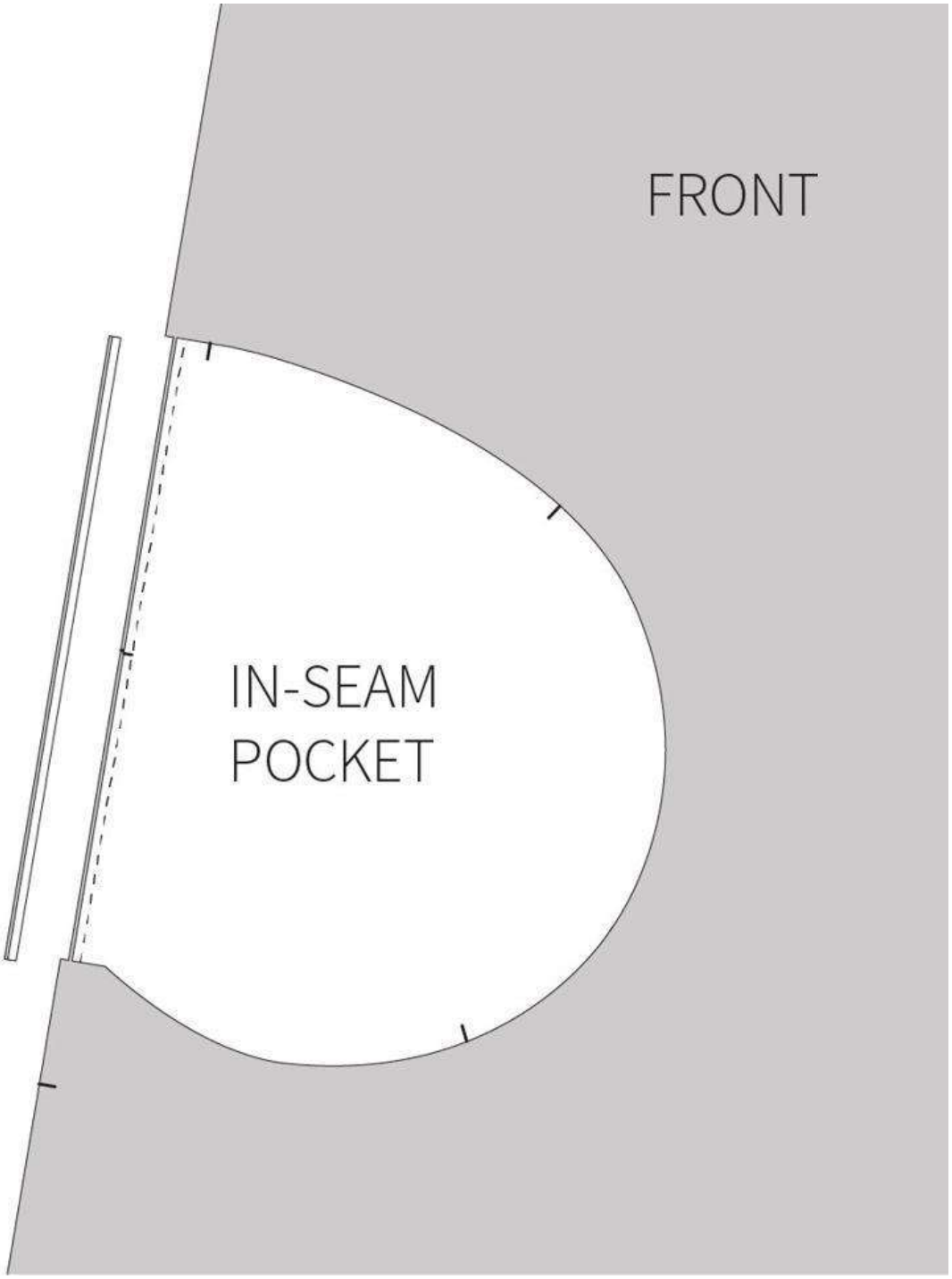
1. They are visible on the outside of the garment and may not suit all designs.
2. Poor positioning can make a garment look untidy.
3. They may distort lightweight fabrics if heavily loaded.
4. Poorly secured edges may come away during use.
5. They may collect dust and dirt because they are exposed.
6. They require accurate stitching to maintain their shape.

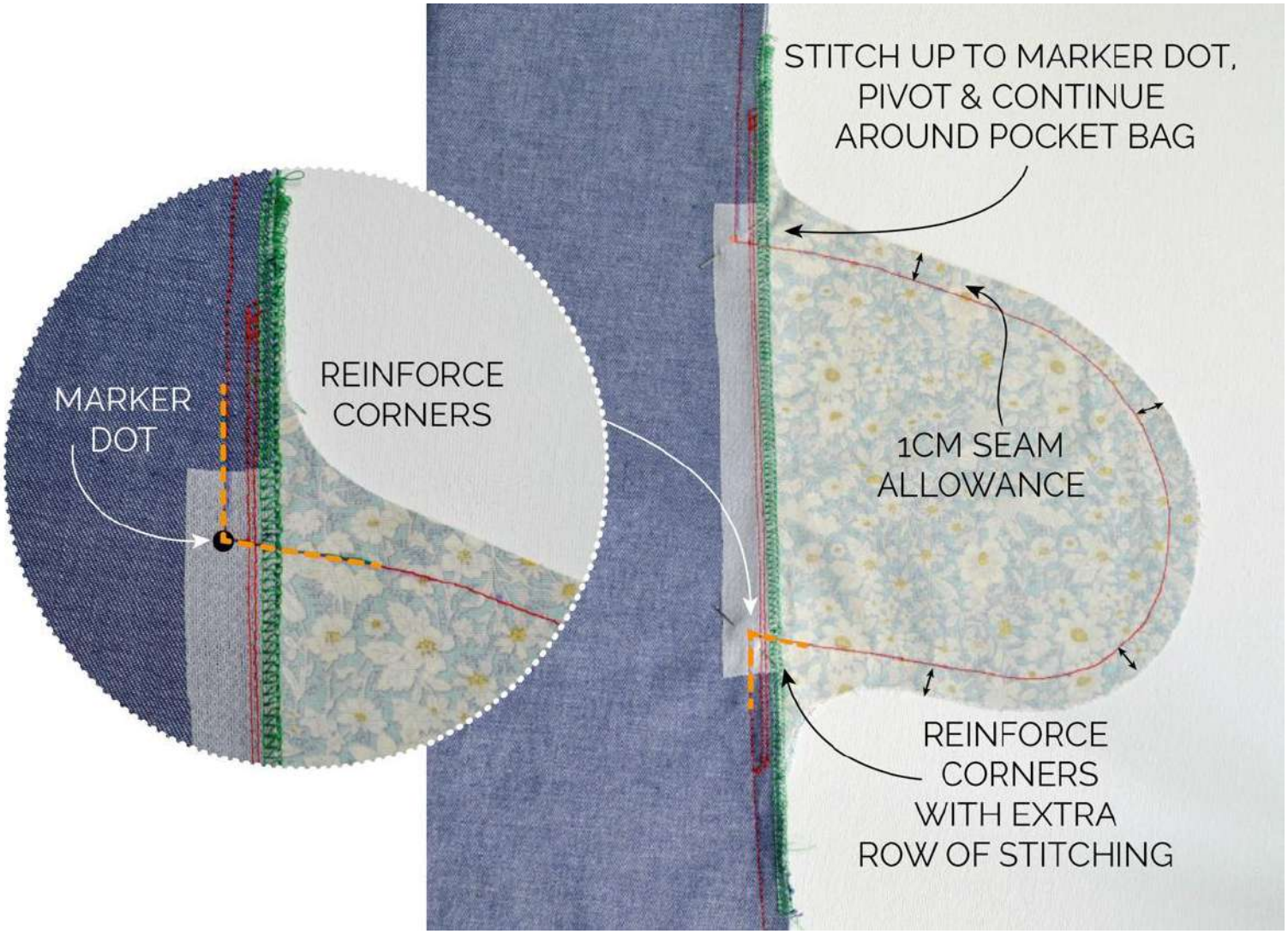
2.2 In-Seam Pockets

An in-seam pocket is a pocket constructed within the seam of a garment, usually along the side seam, so that the pocket is partly or completely concealed when the garment is worn.

The pocket is formed by attaching pocket pieces to the garment sections before joining the seam.

In-seam pockets are commonly used in dresses, skirts, trousers, shorts and loose-fitting garments.


FRONT
IN-SEAM
POCKET


STITCH UP TO MARKER DOT, PIVOT & CONTINUE AROUND POCKET BAG
MARKER DOT
REINFORCE CORNERS
1CM SEAM ALLOWANCE
REINFORCE CORNERS WITH EXTRA ROW OF STITCHING



2.2.1 Characteristics of In-Seam Pockets

1. They are incorporated into a garment seam.
2. They are usually positioned along the side seam.
3. They are less visible than patch pockets.
4. They have an opening that allows the hand to enter the pocket.
5. They consist of pocket bags attached to the garment sections.
6. They require accurate matching of pocket pieces and garment seams.
7. They are usually made from lightweight fabric or the garment fabric.

8. They are suitable for garments where a neat, simple appearance is desired.

2.2.2 Advantages of In-Seam Pockets

1. They give garments a neat and simple appearance.
2. They do not create a prominent external pocket shape.
3. They can be incorporated into existing garment seams during construction.
4. They are suitable for formal and casual clothing.
5. They provide convenient storage.
6. They can be used on dresses, skirts and trousers.
7. They allow designers to maintain the original appearance of the garment.

2.2.3 Disadvantages of In-Seam Pockets

1. They require more construction accuracy than simple patch pockets.
2. Poor stitching may cause the pocket opening to tear.
3. They may cause bulky side seams if thick fabrics are used.
4. They can be difficult to construct for beginners.
5. They may distort the garment if the pocket pieces are incorrectly positioned.
6. They may be difficult to repair without opening the garment seam.

3.0 Comparison Between Patch Pockets and In-Seam Pockets

Patch pockets	In-seam pockets
Attached to the outside of a garment.	Incorporated into a garment seam.
Usually visible.	Usually concealed or less visible.
Made from a separate fabric piece.	Made using pocket pieces joined to garment sections.
Can be decorative.	Mainly provide functional storage with a discreet appearance.
Common on shirts and aprons.	Common on dresses, skirts and trousers.
Generally easier to construct.	Requires accurate seam construction.
Can have different visible shapes.	Usually follows the garment seam arrangement.

4.0 Factors to Consider When Choosing Pockets

The choice of pocket depends on the garment design, purpose, fabric, wearer and construction requirements.

4.1 Purpose of the Garment

The intended use of a garment determines the most appropriate pocket design.

- Work clothes require functional pockets for carrying tools.
- School uniforms may require pockets for pens, handkerchiefs and other small items.
- Formal dresses may require discreet pockets that do not interfere with the garment's appearance.
- Children's clothes may require small, easily accessible pockets.

Example: A mechanic's overall requires strong and functional pockets, while a formal dress may require discreet in-seam pockets.

4.2 Type of Garment

Different garments require different pocket styles.

- Shirts may use patch pockets.
- Dresses may use in-seam pockets.
- Trousers may use side pockets.
- Jackets may use patch pockets with flaps.
- Aprons may use large patch pockets.

4.3 Fabric Type

The fabric used influences the pocket design and construction method.

- Heavy fabrics such as denim can support stronger patch pockets.
- Lightweight fabrics may require lightweight pocket pieces to avoid unnecessary bulk.
- Stretch fabrics require suitable stitching techniques to maintain flexibility.
- Delicate fabrics require careful handling to prevent damage.

4.4 Fashion and Style

The pocket should complement the design of the garment.

- Decorative patch pockets may be selected for fashionable garments.
- In-seam pockets may be selected for a simple, elegant appearance.
- Flap pockets may be chosen for safari jackets and outdoor clothing.
- Contrasting pockets may be used to create a fashionable effect.

4.5 Size of the Pocket

The size should be suitable for the items intended to be carried.

- Large pockets are suitable for overalls and workwear.
- Small pockets may be appropriate for children's clothing.
- Medium-sized pockets may be used on shirts and dresses.

The pocket should not be excessively large or small compared with the garment.

4.6 Position of the Pocket

The pocket should be positioned where it is comfortable and convenient to use.

Considerations include:

- Accessibility.
- Comfort of the wearer.
- Balance and symmetry.
- Garment design.

- Body movement.
- Intended function.

For example, a shirt chest pocket should be positioned at a convenient height for the wearer.

4.7 Age and Needs of the Wearer

The pocket should suit the person who will wear the garment.

- Children's clothing may require easily accessible pockets.
- Working adults may require larger and stronger pockets.
- School learners may need pockets for stationery.
- Older people may prefer conveniently positioned pockets.

4.8 Cost of Construction

The cost of making a pocket should be considered.

- Some pocket designs require additional fabric.
- Complicated pockets require more labour and sewing time.
- Pockets with flaps, buttons and decorative details may increase construction costs.
- Simple patch pockets may be economical to construct.

4.9 Durability

The pocket should withstand frequent use.

- Strong fabric should be selected.
- Stress points should be reinforced.
- Suitable stitches should be used.
- Pocket corners should be securely stitched.
- The pocket mouth should be properly finished.

4.10 Skill of the Person Constructing the Garment

The pocket selected should match the sewing skills available.

- Beginners may start with simple square patch pockets.
- More experienced learners may construct rounded, V-shaped and flap pockets.
- In-seam pockets require careful measurement, positioning and stitching.

5.0 Materials and Equipment Used in Pocket Construction

Pocket construction requires appropriate fabrics, sewing tools and equipment.

5.1 Materials

1. **Main fabric:** Used to construct the garment and may also be used for the pocket.
2. **Pocket fabric:** Used to make the pocket pieces.
3. **Thread:** Used for joining and attaching pocket pieces.

4. **Interfacing:** Used to strengthen or support areas such as the pocket mouth and flap.
5. **Buttons:** Used to secure pockets with flaps.
6. **Press studs:** Used as fasteners for pocket flaps.
7. **Hook-and-loop fasteners:** Used to close some pocket designs.
8. **Bias binding:** May be used for decorative or edge finishing.

5.2 Tools and Equipment



Tool/equipment	Use
Measuring tape	Measuring pocket dimensions and position.
Ruler	Drawing straight lines and accurate shapes.
Tailor's chalk	Marking cutting and stitching lines.
Fabric scissors	Cutting fabric pieces.
Hand-sewing needles	Carrying out hand stitches.
Sewing machine	Joining and attaching pocket pieces.
Pins	Holding fabric pieces together.
Pin cushion	Keeping pins and needles safely.
Iron	Pressing folds and seams.
Ironing board	Providing a suitable surface for pressing.
Seam ripper	Removing unwanted stitches.
Thread	Joining fabric pieces.

6.0 General Preparation Before Making Pockets

Before constructing a pocket, the learner should prepare the materials and work area.

Preparation Procedures

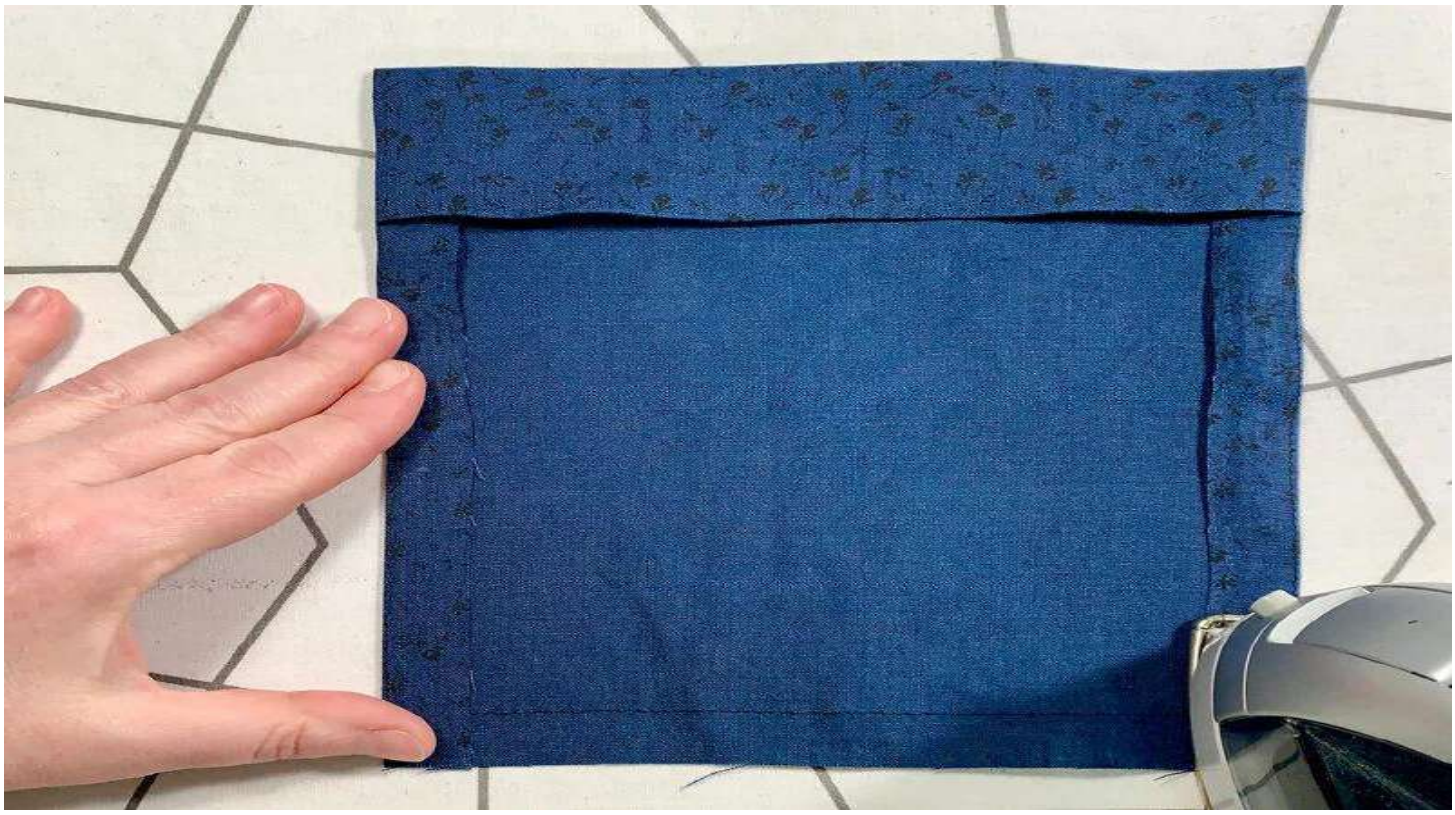
1. Select a suitable pocket design.
2. Choose appropriate fabric.
3. Identify the position of the pocket on the garment.
4. Take accurate measurements.
5. Prepare a paper pattern where necessary.
6. Wash and press fabric if appropriate.
7. Place the pattern on the fabric, observing the grainline.
8. Mark the pocket shape using tailor's chalk.
9. Include suitable seam allowances.
10. Cut the pocket pieces accurately.
11. Prepare the sewing machine and tools.
12. Arrange the work area safely.

Important: Measurements and seam allowances should be appropriate for the pocket design and fabric.

7.0 CONSTRUCTION OF PATCH POCKETS

Patch pockets can be constructed in different shapes. The basic procedure is similar, although the shaping and finishing may vary.

7.1 Procedure for Making a Square Patch Pocket



Requirements

- Suitable fabric.
- Matching sewing thread.
- Measuring tape.
- Ruler.
- Tailor's chalk.
- Fabric scissors.
- Sewing machine.
- Pins.
- Iron.

Procedure

1. Select the fabric to be used for the pocket.
2. Determine the required pocket dimensions.
3. Draw a rectangular pocket pattern on paper.
4. Add seam allowances to the sides and bottom.
5. Add an appropriate allowance for finishing the upper edge.
6. Place the pattern on the fabric, observing the grainline.
7. Pin the pattern securely.
8. Mark the outline using tailor's chalk.
9. Remove the pattern and cut out the pocket piece.
10. Finish the upper edge using a suitable method.
11. Fold the side and bottom seam allowances to the wrong side.
12. Press the folded edges to make them flat and even.
13. Position the pocket on the garment using the markings.
14. Pin the pocket in place.
15. Check that the pocket is straight and correctly positioned.
16. Machine stitch around the sides and bottom edges.
17. Reinforce the upper corners using backstitching or another suitable method.
18. Remove loose threads.
19. Press the finished pocket carefully.



7.2 Procedure for Making a Rounded-Bottom Patch Pocket

Procedure

1. Select suitable fabric.
2. Draw the pocket pattern with a straight upper edge and rounded lower corners.
3. Add seam allowances around the sides and bottom.
4. Mark the pattern on the fabric.
5. Cut the pocket piece accurately.
6. Finish the pocket mouth using a hem or facing.
7. Fold the seam allowances towards the wrong side.
8. Shape the rounded lower corners carefully.
9. Use gathering stitches or easing stitches where necessary to control the curved edges.
10. Press the folded edges smoothly.
11. Mark the position of the pocket on the garment.
12. Place the pocket correctly on the garment.
13. Pin it in position.
14. Machine stitch along the sides and bottom.
15. Reinforce the upper corners.
16. Remove loose threads.
17. Press the finished pocket.

Note: Curved edges should be shaped carefully to prevent wrinkles and unevenness.

7.3 Procedure for Making a V-Shaped Patch Pocket

Procedure

1. Select appropriate fabric.
2. Prepare a pocket pattern with a V-shaped lower edge.
3. Add seam allowances.
4. Place the pattern on the fabric.
5. Mark the pocket outline.
6. Cut out the pocket piece.
7. Finish the upper edge.
8. Fold the seam allowances towards the wrong side.
9. Carefully shape the pointed lower edge.
10. Press the edges into position.
11. Mark the position of the pocket on the garment.
12. Pin the pocket onto the garment.
13. Check the alignment and position.
14. Machine stitch around the sides and bottom.
15. Reinforce the upper corners.
16. Remove loose threads.
17. Press the finished pocket.



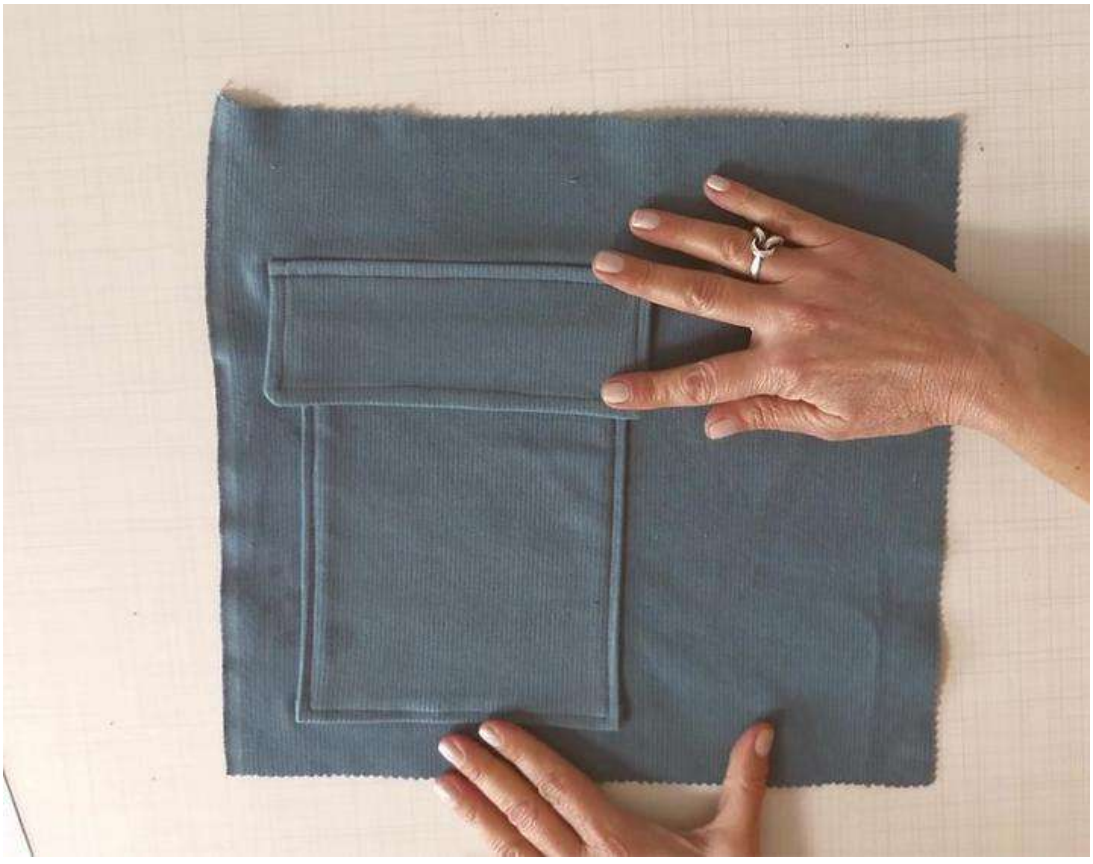
7.4 Procedure for Making a Patch Pocket with a Flap

A flap is an additional fabric piece attached above the pocket mouth to cover the opening.

Procedure

1. Select suitable fabric for the pocket and flap.
2. Prepare the pocket pattern.
3. Cut the pocket piece with the required seam allowances.
4. Prepare a flap pattern according to the desired shape.
5. Cut two flap pieces where a double-layered flap is required.

6. Apply interfacing where necessary to strengthen the flap.
7. Place the flap pieces right sides together.
8. Stitch around the sides and lower edge, leaving the upper edge open.
9. Trim bulky seam allowances where necessary.
10. Turn the flap to the right side.
11. Shape the corners and press neatly.
12. Finish the pocket mouth.
13. Fold and press the pocket sides and bottom.
14. Position the pocket on the garment.
15. Stitch the pocket along the sides and bottom.
16. Position the flap above the pocket mouth.
17. Attach the flap securely.
18. Add a button, press stud or other suitable fastening where required.
19. Remove loose threads and press the completed pocket.



8.0 FINISHING THE POCKET MOUTH

The pocket mouth is the opening through which items are placed into or removed from a pocket.

It should be finished properly to prevent fraying, improve strength and enhance appearance.

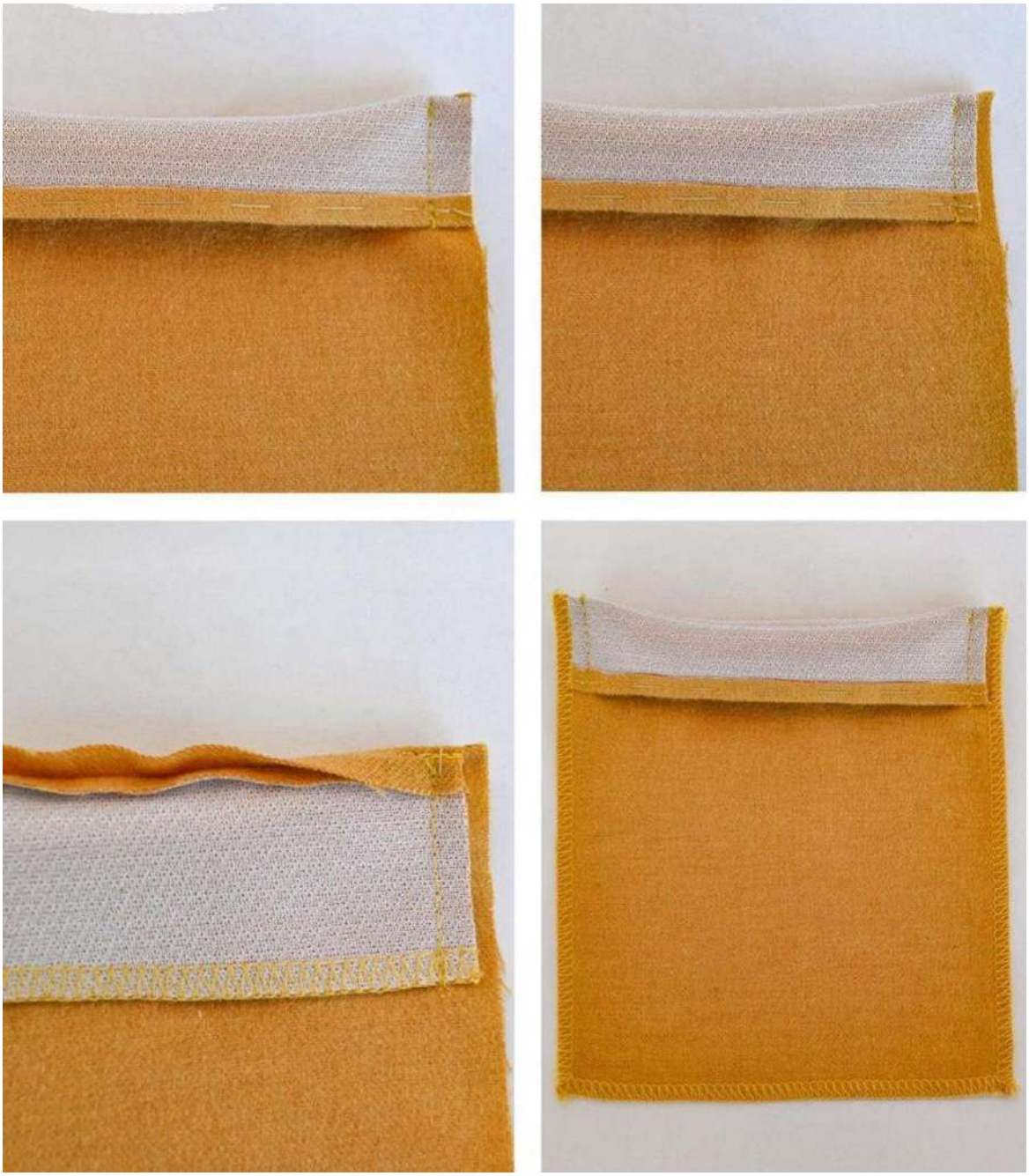
The three main finishing methods covered in this sub-strand are:

1. Facing.

2. Hemming.
3. Flap finishing.

8.1 Finishing the Pocket Mouth Using a Facing

A facing is a separate piece of fabric attached to an edge or opening to give it a neat and durable finish.



Procedure

1. Measure the pocket mouth.
2. Cut a facing piece of suitable width and length.
3. Place the facing and pocket piece right sides together along the opening.
4. Align their raw edges.
5. Pin the pieces together.
6. Stitch along the marked stitching line.
7. Trim excess seam allowance where necessary.

8. Clip curved sections where necessary.
9. Turn the facing to the wrong side.
10. Press the seam neatly.
11. Secure the facing using suitable stitching.
12. Remove loose threads.

Advantages of facing

- Provides a neat finish.
- Strengthens the pocket mouth.
- Prevents raw edges from being exposed.
- Improves the appearance of the pocket.
- Allows the use of contrasting fabric for decoration.

8.2 Finishing the Pocket Mouth Using a Hem

A hem is a finished edge formed by folding the raw edge of fabric towards the wrong side and stitching it securely.



Procedure

1. Measure the pocket mouth.
2. Mark the required hem allowance.
3. Fold the raw edge towards the wrong side.
4. Press the first fold.
5. Fold again if a double hem is required.
6. Press the second fold.
7. Pin the hem in position.
8. Machine stitch close to the folded edge.
9. Secure the stitches at both ends.
10. Remove loose threads.
11. Press the finished opening.

Advantages of hemming

- It is simple to construct.
- It prevents fraying.
- It gives the pocket mouth a neat appearance.
- It is economical because it uses the pocket fabric itself.
- It is suitable for many patch pocket designs.

8.3 Finishing the Pocket Mouth Using a Flap

A flap is a piece of fabric attached above a pocket opening to cover it.



Procedure

1. Prepare a flap pattern.
2. Cut the flap fabric pieces.
3. Apply interfacing if required.
4. Place the pieces right sides together.
5. Stitch around the sides and lower edge.
6. Trim the seam allowances where necessary.
7. Turn the flap to the right side.
8. Shape the corners and press.
9. Attach the flap above the pocket opening.
10. Secure it using appropriate stitching.
11. Add a button or other fastening if required.
12. Press the finished flap.

Advantages of flap finishing

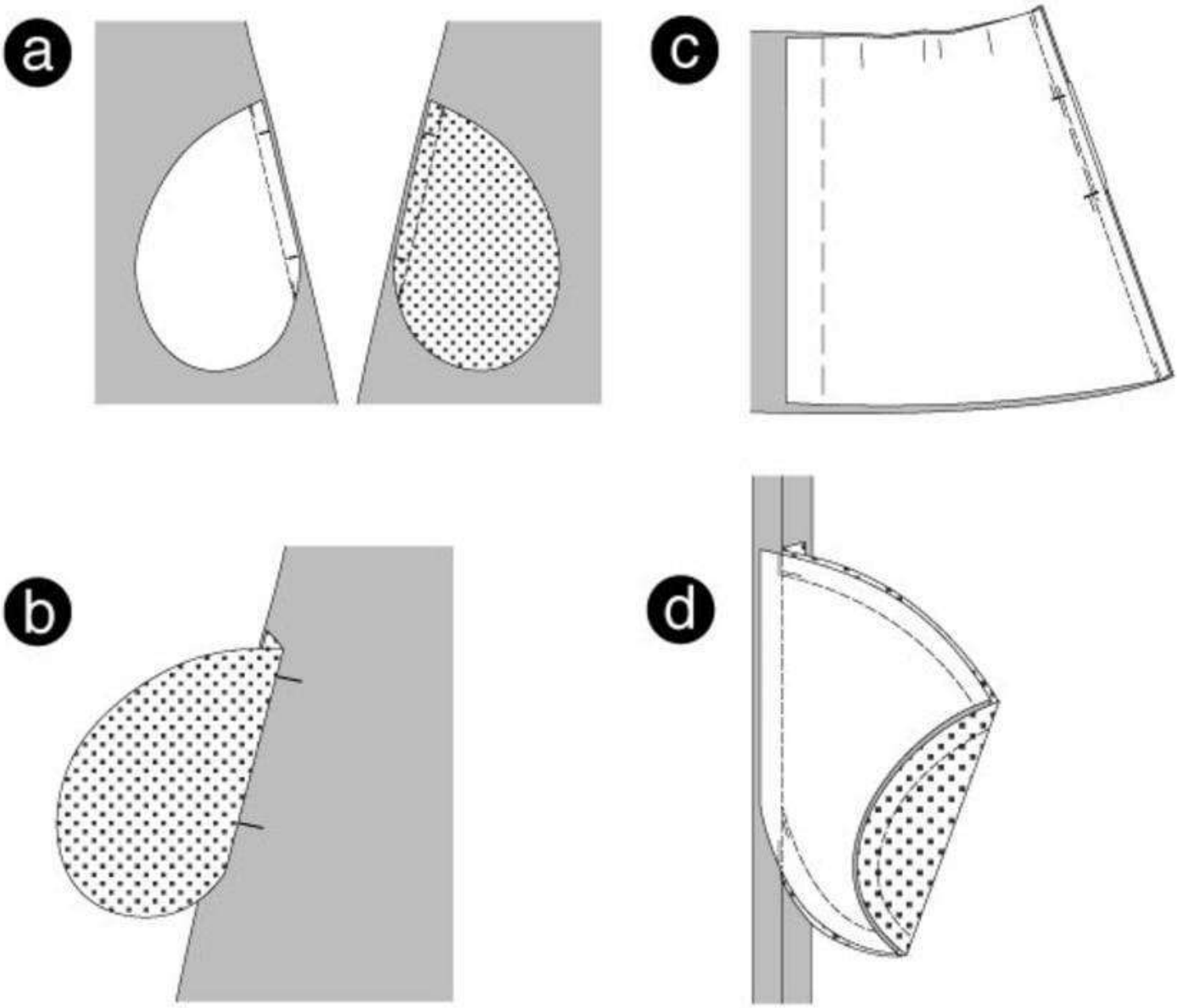
- It covers the pocket opening.
- It reduces the possibility of items falling out.
- It adds decorative detail.
- It improves the style of a garment.
- It helps protect pocket contents from dust and light rain.

9.0 CONSTRUCTION OF IN-SEAM POCKETS

9.1 Materials Required

- Main garment fabric.
- Pocket fabric.
- Matching sewing thread.
- Measuring tape.
- Tailor's chalk.
- Fabric scissors.
- Pins.
- Sewing machine.
- Iron and ironing board.

9.2 Procedure for Making an In-Seam Pocket



1. Select a suitable garment design.
2. Identify the seam where the pocket will be inserted.
3. Prepare a pocket pattern of suitable size and shape.
4. Cut two matching pocket pieces for the relevant garment side.
5. Mark the position of the pocket opening on the garment pieces.
6. Place one pocket piece on the front garment section, right sides together.
7. Align the pocket edge with the garment seam allowance.
8. Pin the pieces together.
9. Stitch along the pocket opening attachment line.
10. Repeat the process on the corresponding back garment section.
11. Press the pocket pieces away from the garment.
12. Place the front and back garment sections right sides together.
13. Align the pocket pieces accurately.

14. Pin the side seam and pocket edges together.
15. Stitch the side seam, following the seam allowance.
16. Stitch around the curved outer edge of the pocket bag.
17. Ensure the stitching joins the pocket pieces securely.
18. Finish the raw edges using an appropriate method, such as overlocking or zigzag stitching.
19. Press the side seam and pocket bag neatly.
20. Turn the garment to the right side.
21. Check the pocket opening for smoothness and accessibility.
22. Remove loose threads and press the completed garment.



9.3 Important Points to Observe When Making In-Seam Pockets

1. The pocket pieces should be accurately cut.
2. The pocket opening should be positioned correctly.
3. Both sides of the garment should match.
4. The pocket bags should be sufficiently deep.

5. The pocket opening should be wide enough for comfortable use.
6. The pocket should not interfere with the garment's fit.
7. The stitching should be strong and secure.
8. The pocket bag should be finished to prevent fraying.
9. The pocket should be pressed properly.
10. The finished pocket should not be visible through the garment unless intended by the design.

10.0 QUALITIES OF A WELL-MADE POCKET

A well-made pocket should meet functional, structural and aesthetic requirements.



10.1 Accurate Shape

- The pocket should have the intended shape.
- Its edges should be evenly formed.
- Curved or pointed sections should be neatly shaped.

10.2 Correct Positioning

- The pocket should be placed according to the garment design.
- It should be at a comfortable and convenient position.
- Corresponding pockets should be symmetrical where required.

10.3 Even Stitching

- Stitching should be straight and evenly spaced.
- Stitches should be of appropriate length.
- There should be no skipped stitches.
- Thread tension should be balanced.

10.4 Strong Attachment

- The pocket should be firmly attached to the garment.
- The corners should be reinforced.
- The pocket mouth should be strong enough to withstand frequent use.

10.5 Neat Finishing

- Raw edges should be properly finished.
- There should be no loose threads.
- Seam allowances should be properly controlled.
- The pocket should be neatly pressed.

10.6 Appropriate Size

- The pocket should be large enough for its intended use.
- It should not be unnecessarily large.
- It should be proportionate to the garment.

10.7 Durability

- Suitable fabric and thread should be used.
- The pocket should withstand repeated use and laundering.
- The stitching should not unravel easily.

10.8 Functionality

- The pocket should be easy to access.
- It should hold the intended items.
- Its opening should not be obstructed.
- It should not cause discomfort to the wearer.

10.9 Good Appearance

- The pocket should blend with the garment design.

- Decorative details should be neatly executed.
- The fabric should not have unwanted puckering or wrinkles.

11.0 COMMON DEFECTS IN POCKET CONSTRUCTION AND THEIR REMEDIES

Defect	Possible cause	Remedy
Uneven pocket shape	Inaccurate marking and cutting	Use an accurate pattern and measurements.
Puckering	Incorrect tension or excessive fabric handling	Adjust thread tension and handle fabric carefully.
Crooked pocket	Incorrect positioning	Mark the position before attaching.
Loose pocket corners	Inadequate reinforcement	Secure corners using backstitching or bar tacks.
Fraying edges	Poor edge finishing	Use suitable finishing methods.
Uneven topstitching	Poor machine control	Practise stitching and guide fabric evenly.
Bulky pocket	Excessive seam allowances or thick fabric	Trim bulk and select suitable fabric.
Twisted in-seam pocket	Incorrect matching of pocket pieces	Align and pin the pieces accurately.
Pocket opening too small	Incorrect measurement	Measure the opening according to its intended use.
Pocket flap does not cover opening	Incorrect flap measurements	Adjust the flap pattern before construction.

12.0 CARE AND MAINTENANCE OF POCKETS

Proper care helps maintain the appearance, strength and functionality of pockets.

1. Empty pockets before washing garments.
2. Remove dirt and debris from pocket interiors.
3. Repair loose stitching immediately.
4. Avoid overloading pockets with heavy items.
5. Reinforce torn pocket corners.
6. Wash garments according to fabric-care instructions.
7. Iron pockets according to the fabric requirements.
8. Avoid using excessive heat on delicate fabrics.
9. Replace damaged fasteners where necessary.
10. Store garments in a clean and dry place.

13.0 SAFETY AND HYGIENE DURING POCKET CONSTRUCTION

Learners should observe safety measures when using sewing tools and equipment.

13.1 Safety Precautions

1. Handle fabric scissors carefully.
2. Keep needles and pins in a pin cushion.
3. Do not leave pins scattered on the working table.

4. Switch off the sewing machine when not in use.
5. Keep fingers away from the sewing machine needle.
6. Use the correct needle for the fabric.
7. Avoid pulling fabric forcefully while stitching.
8. Keep electrical equipment away from water.
9. Use the iron carefully to prevent burns.
10. Allow the iron to cool before storing it.

13.2 Proper Disposal of Fabric Clippings and Thread Waste

During pocket construction, fabric pieces, loose threads and other waste materials are produced.

Proper disposal protects the environment and maintains cleanliness.

- Collect fabric clippings in a designated waste container.
- Put loose threads in a waste container.
- Reuse suitable fabric remnants for practising stitches.
- Use larger fabric remnants for making small accessories.
- Separate recyclable materials where appropriate.
- Dispose of unusable textile waste responsibly.
- Keep the sewing area clean after the activity.

13.3 Reusing Fabric Remnants

Fabric remnants can be used to make:

- Small patch pockets for practice.
- Needle cases.
- Small bags.
- Fabric decorations.
- Doll clothes.
- Appliqué designs.
- Sample sewing projects.

14.0 PRACTICAL LEARNING ACTIVITIES

Activity 1: Identification of Pockets

Instructions

1. Collect different garments from home or school.
2. Observe the pockets on each garment.
3. Identify the type of pocket used.
4. Record the garment and pocket type.

5. Explain why the particular pocket may have been selected.

Garment	Type of pocket	Possible reason for selection
School shirt	Patch pocket	Easy access to small items.
Dress	In-seam pocket	Maintains a simple appearance.
Overall	Patch pocket with flap	Provides secure storage.
Skirt	In-seam pocket	Gives a neat appearance.
Apron	Patch pocket	Convenient for holding utensils.

Activity 2: Making Different Patch Pockets

Instructions

1. Prepare square, rounded and V-shaped pocket patterns.
2. Cut pocket pieces from suitable fabric remnants.
3. Finish the pocket mouths.
4. Attach the pockets to sample fabric.
5. Make a patch pocket with a flap.
6. Label the samples.
7. Mount the samples in a folder.
8. Present the work to classmates.

Activity 3: Making an In-Seam Pocket

Instructions

1. Prepare two pieces of fabric representing garment sections.
2. Prepare two pocket pieces.
3. Mark the pocket opening.
4. Attach the pocket pieces to the garment sections.
5. Join the garment sections.
6. Complete the pocket bag.
7. Finish raw edges.
8. Press the sample.
9. Evaluate the finished work.

Activity 4: Peer Assessment

Learners should exchange their pocket samples and assess each other's work using the following checklist.

Assessment criterion	Yes	No
Is the pocket correctly shaped?		

Is the pocket correctly positioned?		
Is the stitching even?		
Are the edges properly finished?		
Are the corners reinforced?		
Is the pocket functional?		
Is the pocket neatly pressed?		
Are there no loose threads?		
Is the pocket attractive?		

15.0 KEY TERMS AND DEFINITIONS

Term	**Meaning**
Pocket	A compartment attached to or incorporated into a garment for holding items.
Patch pocket	A pocket made separately and attached to the outer surface of a garment.
In-seam pocket	A pocket incorporated into a garment seam.
Pocket mouth	The opening through which items enter and leave a pocket.
Facing	A separate fabric piece used to finish an edge or opening.
Hem	A finished edge made by folding and stitching fabric.
Flap	A piece of fabric attached above a pocket opening to cover it.
Interfacing	A material used to strengthen or support parts of a garment.
Seam allowance	Extra fabric allowed beyond the stitching line.
Backstitching	Stitching backwards over previous stitches to secure a seam.
Topstitching	Visible stitching on the outer surface of a garment.
Pocket bag	The fabric compartment forming the inside of a pocket.
Reinforcement	Additional stitching or material used to strengthen an area.
Grainline	The direction of the threads in woven fabric.

REVISION EXERCISES

GRADE 11 HOME SCIENCE

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.3: CLOTHING CONSTRUCTION PROCESSES – POCKETS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Answer all questions. Each question carries 1 mark. Choose the most appropriate answer.

1. What is a pocket in garment construction?

A. A decorative button attached to a garment.

B. A compartment attached to or incorporated into a garment for holding items.

C. A strip of fabric used to strengthen a garment.

D. A folded edge used to finish a garment.

2. Which of the following is a main type of pocket studied in clothing construction?

A. Pleated pocket.

B. Gathered pocket.

C. Patch pocket.

D. Bound sleeve.

3. A pocket made separately and attached to the outer surface of a garment is called a:

A. Patch pocket.

B. In-seam pocket.

C. Welt seam.

D. Dart pocket.

4. Which garment is most likely to have an in-seam pocket?

A. A school shirt with a chest pocket.

B. A dress with concealed side pockets.

C. An apron with a front pocket.

D. A jacket with an external pocket.

5. The main characteristic of an in-seam pocket is that it is:

A. Attached to the neckline.

B. Incorporated into a garment seam.

C. Attached to the sleeve hem.

D. Made entirely from interfacing.

6. Which pocket design has a pointed lower edge?

A. Square patch pocket.

B. Rounded patch pocket.

C. V-shaped patch pocket.

D. Rectangular flap pocket.

7. A flap is mainly used on a pocket to:

A. Increase the length of the garment.

B. Cover the pocket opening.

C. Form the garment waistband.

D. Join two garment panels.

8. Which of the following is an advantage of patch pockets?

A. They are always invisible.

B. They are difficult to repair.

C. They are relatively easy to construct.

D. They cannot be used for decoration.

9. Which factor is important when choosing a pocket for a garment?

A. Colour of the sewing machine.

B. Intended use of the garment.

C. Size of the classroom.

D. Number of learners in the class.

10. A mechanic's overall requires pockets that are:

A. Weak and decorative.

B. Strong and functional.

C. Very small and concealed.

D. Made only from delicate fabric.

11. Which tool is used to mark pocket shapes on fabric?

A. Seam ripper.

B. Tailor's chalk.

C. Thimble.

D. Pin cushion.

12. What is the main purpose of interfacing in pocket construction?

A. To weaken the fabric.

B. To strengthen and support selected areas.

C. To remove stains.

D. To shorten the pocket.

13. The opening through which items are placed into a pocket is called the:

A. Pocket bag.

B. Pocket mouth.

C. Seam allowance.

D. Grainline.

14. Which finishing method involves folding the raw edge of fabric and stitching it?

A. Hemming.

B. Gathering.

C. Pleating.

D. Darning.

15. A facing is used in pocket construction to:

A. Decorate the sewing machine.

B. Finish an edge or opening neatly.

C. Increase fabric shrinkage.

D. Remove the seam allowance.

16. Which type of pocket is commonly used on safari shirts?

A. Patch pocket with flap.

B. Concealed waistband pocket.

C. Sleeve pocket only.

D. Decorative dart.

17. What should be done before cutting pocket pieces?

A. Stitch the pocket onto the garment.

B. Take accurate measurements and mark the pattern.

C. Wash the finished garment.

D. Remove all seam allowances.

18. Why should the corners of a patch pocket be reinforced?

A. To make the pocket smaller.

B. To prevent the pocket from tearing easily.

C. To change the fabric colour.

D. To make the pocket invisible.

19. Which stitch is suitable for securing the upper corners of a patch pocket?

A. Gathering stitch.

B. Backstitch.

C. Tacking stitch only.

D. Loop stitch.

20. What is likely to happen if pocket pieces are inaccurately measured?

A. The pocket may have an incorrect shape or size.

B. The fabric becomes stronger.

C. The pocket becomes waterproof.

D. The garment becomes longer.

21. Which pocket is generally less visible on the outside of a garment?

A. Patch pocket.

B. In-seam pocket.

C. Flap patch pocket.

D. Decorative patch pocket.

22. Why should pocket openings be finished properly?

A. To increase fabric wastage.

B. To prevent fraying and improve appearance.

C. To make the garment heavier.

D. To reduce the pocket depth.

23. Which of the following is a quality of a well-made pocket?

A. Uneven stitching.

B. Loose corners.

C. Accurate positioning.

D. Exposed raw edges.

24. What causes puckering during pocket construction?

A. Correct thread tension.

B. Incorrect tension and poor fabric handling.

C. Accurate pressing.

D. Correct pattern placement.

25. Which equipment is used to press pocket folds?

A. Iron.

B. Seam ripper.

C. Measuring tape.

D. Pin cushion.

26. Which of the following is an appropriate way of disposing of thread waste?

A. Scattering it on the floor.

B. Throwing it into drainage channels.

C. Collecting it in a designated waste container.

D. Leaving it on the sewing machine.

27. What is the purpose of pressing a pocket during construction?

A. To remove all stitching.

B. To produce neat folds and improve appearance.

C. To increase the pocket size automatically.

D. To weaken the fabric.

28. Which pocket is most suitable for an apron used in a Kenyan school Home Science kitchen?

A. A functional patch pocket.

B. A decorative sleeve pocket.

C. A concealed shoulder pocket.

D. A pointed pocket on the collar.

29. Why should learners switch off sewing machines when not in use?

A. To reduce unnecessary energy use and prevent accidents.

B. To make the machine hotter.

C. To increase thread consumption.

D. To make the fabric shrink.

30. During peer assessment, which feature should learners examine?

A. The price of the classroom furniture.

B. The neatness, strength and functionality of the pocket.

C. The colour of the learner's shoes.

D. The number of sewing machines available.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer all questions.

1. (8 marks)

a) Define the term pocket as used in clothing construction. (2 marks)

b) Identify THREE functions of pockets in garments. (3 marks)

c) State THREE examples of garments commonly fitted with patch pockets. (3 marks)

2. (8 marks)

a) Differentiate between a patch pocket and an in-seam pocket. (4 marks)

b) State FOUR shapes or designs of patch pockets. (4 marks)

3. (8 marks)

A Grade 11 learner is required to make a square patch pocket for a school shirt.

a) Identify FOUR tools or equipment required for the construction. (4 marks)

b) Outline FOUR procedures followed when attaching the pocket to the garment. (4 marks)

4. (8 marks)

a) Explain FOUR factors to consider when selecting a pocket for a garment. (4 marks)

b) State FOUR qualities of a well-constructed pocket. (4 marks)

5. (9 marks)

a) Explain THREE methods of finishing a pocket mouth. (6 marks)

b) State THREE advantages of using a flap on a pocket. (3 marks)

6. (9 marks)

During a Home Science practical lesson, learners construct patch and in-seam pockets.

a) State THREE safety precautions to observe during pocket construction. (3 marks)

b) Explain THREE ways of maintaining a clean working environment during pocket construction. (3 marks)

c) Identify THREE common defects that may occur during pocket construction. (3 marks)

MARKING SCHEME

SECTION A: ANSWERS (30 MARKS)

Question	Answer	Question	Answer
1	B	16	A
2	C	17	B
3	A	18	B
4	B	19	B
5	B	20	A
6	C	21	B
7	B	22	B
8	C	23	C
9	B	24	B
10	B	25	A
11	B	26	C
12	B	27	B
13	B	28	A
14	A	29	A
15	B	30	B

SECTION B: SUGGESTED MARKING SCHEME (50 MARKS)

1. (8 marks)

a) A pocket is a fabric compartment attached to or incorporated into a garment for holding personal items. (2 marks)

b) Functions of pockets:

- Provide storage for small personal items. (1)
- Improve convenience and accessibility. (1)
- Enhance the appearance of garments. (1)

c) Examples:

- Shirts. (1)
- Aprons. (1)
- Jackets. (1)

Other acceptable examples include trousers, dresses, skirts and overalls.

2. (8 marks)

a) Differences:

Patch pocket	**In-seam pocket**
Attached to the outer surface of a garment. (1)	Incorporated into a garment seam. (1)
Usually visible. (1)	Usually concealed or less visible. (1)

b) Shapes or designs:

- Square or rectangular. (1)
- Rounded-bottom. (1)
- V-shaped. (1)
- Patch pocket with flap. (1)

3. (8 marks)

a) Tools and equipment:

- Measuring tape. (1)
- Ruler. (1)
- Tailor's chalk. (1)
- Fabric scissors. (1)

Other acceptable answers: sewing machine, pins, needles, iron and ironing board.

b) Procedures:

- Mark the pocket position accurately. (1)
- Position the pocket on the garment. (1)
- Pin the pocket securely. (1)
- Stitch the sides and bottom, reinforcing the upper corners. (1)

4. (8 marks)

a) Factors:

- **Purpose of garment:** The pocket should meet the intended function of the garment. (1)
- **Fabric type:** The fabric should be suitable for the selected pocket design. (1)
- **Fashion and style:** The pocket should complement the garment's appearance. (1)
- **Size of pocket:** It should accommodate the intended items. (1)

Other acceptable answers include position, cost, durability, age of wearer and sewing skills.

b) Qualities:

- Accurate shape. (1)
- Correct positioning. (1)
- Even stitching. (1)
- Neat finishing. (1)

5. (9 marks)

a) Methods of finishing a pocket mouth:

- **Facing:** A separate piece of fabric is attached to the opening and turned to the wrong side to produce a neat finish. (2)
- **Hemming:** The raw edge is folded towards the wrong side and stitched to prevent fraying. (2)

- **Flap:** An additional piece of fabric is attached above the opening to cover it. (2)

b) Advantages of a flap:

- Prevents items from falling out easily. (1)
- Improves the appearance of the garment. (1)
- Protects pocket contents from dust and light rain. (1)

6. (9 marks)

a) Safety precautions:

- Keep needles and pins in a pin cushion. (1)
- Handle scissors carefully. (1)
- Switch off the sewing machine when not in use. (1)

b) Maintaining a clean working environment:

- Collect fabric clippings in a designated waste container. (1)
- Collect loose threads and dispose of them appropriately. (1)
- Clean and organise the working area after sewing. (1)

c) Common defects:

- Uneven stitching. (1)
- Puckering. (1)
- Poor pocket positioning. (1)

Other acceptable answers include fraying, loose corners, twisted pocket bags, incorrect pocket shape and bulky seams.

TEACHER'S CBE ASSESSMENT GUIDANCE

Suggested competencies developed through this sub-strand

Core competency	Application during learning
Communication and collaboration	Learners discuss pocket designs and assess one another's work.
Critical thinking and problem solving	Learners select suitable pocket designs and correct construction defects.
Creativity and imagination	Learners develop different pocket shapes and styles.
Learning to learn	Learners research pocket construction methods using digital and print resources.
Digital literacy	Learners watch instructional videos and research garment designs.
Self-efficacy	Learners independently construct and evaluate pocket samples.

Pertinent and contemporary issues (PCIs)

- Environmental conservation through proper disposal and reuse of fabric remnants.
- Occupational health and safety during sewing.
- Resource management through economical use of fabric and thread.
- Personal responsibility through proper care of sewing equipment.

Values

- Responsibility.
- Cooperation.
- Respect.
- Integrity.
- Unity.
- Care and concern.

Suggested learning resources

- Sample garments with different pocket designs.
- Fabric remnants.
- Sewing machines.
- Needles and thread.
- Measuring tapes and rulers.
- Tailor's chalk.
- Fabric scissors.
- Pins and pin cushions.
- Irons and ironing boards.
- Digital instructional videos.

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.4: CLOTHING CONSTRUCTION PROCESSES – OPENINGS

1.0 INTRODUCTION TO GARMENT OPENINGS

1.1 Meaning of a garment opening

A **garment opening** is a finished slit, gap or space made in a garment to enable the wearer to put on and remove the garment easily.

- Openings make it possible for garments to pass over parts of the body.
- They allow easy dressing and undressing.
- They may be used for decorative purposes.
- They provide access to areas of the body, for example, pockets.
- They may be positioned at the front, back, side, shoulder or neckline of a garment.

Examples of garments with openings:

1. Shirts.
2. Blouses.
3. Dresses.
4. Skirts.
5. Trousers.
6. Jackets.
7. School uniforms.
8. Children's clothing.

1.2 Importance of openings in clothing construction

Openings are important because they:

1. **Facilitate dressing and undressing:** They allow garments to be worn and removed without difficulty.
2. **Provide comfort:** Properly designed openings prevent unnecessary pulling and stretching of garments.
3. **Improve garment fit:** They allow garments to accommodate different body measurements.
4. **Enhance appearance:** Well-finished openings improve the general appearance of garments.
5. **Allow movement:** Some openings, such as skirt slits, allow the wearer to walk comfortably.
6. **Provide access:** Openings may allow access to pockets and other garment features.
7. **Promote durability:** Properly reinforced openings prevent fabric from tearing easily.
8. **Support functionality:** They allow garments to be designed for specific purposes.

2.0 TYPES OF GARMENT OPENINGS

Garment openings are classified according to their construction methods and finishing techniques.

The main types covered in this sub-strand are:

1. Faced slit opening.
2. Bound opening.
3. Continuous wrap opening.
4. Front opening.

2.1 FACED SLIT OPENING

Meaning

A **faced slit opening** is an opening made by cutting a slit into a garment and finishing its edges with a separate piece of fabric called a facing.

The facing is usually attached to the wrong side of the garment and turned to the inside to give the opening a neat finish.

Examples of garments where faced slit openings are used

- Blouses.
- Dresses.
- Children's garments.
- Tunics.
- Lightweight tops.
- Traditional garments.

Features of a faced slit opening

1. It has a slit cut into the garment fabric.
2. Its edges are finished using a separate facing.
3. The facing is normally hidden on the wrong side.
4. It gives the opening a smooth and neat appearance.
5. It can be reinforced at the end of the slit to prevent tearing.
6. It can be made in different lengths depending on the garment design.

Materials and equipment required

Materials

- Main garment fabric.
- Facing fabric.
- Sewing thread.
- Interfacing, where necessary.

Equipment and tools

- Sewing machine.
- Hand-sewing needles.
- Fabric scissors.

- Measuring tape.
- Ruler.
- Tailor's chalk.
- Pins.
- Iron and ironing board.
- Seam ripper.

Procedure for making a faced slit opening

Step 1: Prepare the fabric

- Select the fabric suitable for the garment.
- Press the fabric to remove wrinkles.
- Identify the position and length of the opening.
- Mark the opening accurately using tailor's chalk.

Step 2: Prepare the facing

- Cut a suitable facing piece.
- Ensure that the facing is wider and longer than the intended slit.
- Finish or stabilise the facing where necessary.
- Press the facing.

Step 3: Position the facing

- Place the facing on the right side of the garment fabric.
- Ensure that the marked slit lies centrally within the facing.
- Pin the facing securely in position.

Step 4: Stitch around the slit

- Stitch around the marked slit using a sewing machine.
- Use straight stitching.
- Stitch accurately around the lower end of the slit.
- Reinforce the stitching at the end.

Step 5: Cut the slit

- Carefully cut along the centre of the marked slit.
- Make diagonal clips towards the corners without cutting through the stitches.
- Take extra care when clipping the pointed end.

Step 6: Turn the facing

- Turn the facing through the slit to the wrong side.
- Smooth the edges carefully.

- Ensure that the seam is not visible on the right side.

Step 7: Press and finish

- Press the opening flat.
- Secure the facing on the wrong side.
- Hand-stitch or machine-stitch where necessary.
- Inspect the finished opening.

Qualities of a well-made faced slit opening

- It is symmetrical.
- The edges are smooth and even.
- The stitching is straight and secure.
- There are no visible raw edges.
- The end is properly reinforced.
- The facing does not show on the right side.
- There are no puckers or wrinkles.

2.2 BOUND OPENING

Meaning

A **bound opening** is a garment opening whose raw edges are enclosed using narrow strips of fabric known as bindings.

The binding covers the raw edges of the slit, preventing fraying and giving the opening a neat finish.

Examples of garments where bound openings are used

1. Blouses.
2. Shirts.
3. Dresses.
4. Children's wear.
5. Lightweight jackets.
6. Tunics.

Features of a bound opening

- It has neatly enclosed raw edges.
- It is usually finished using two narrow strips of fabric.
- The binding may be made from matching or contrasting fabric.
- It provides a decorative finish.
- It helps prevent fraying.
- It can be used on different parts of a garment.

Materials and equipment required

- Main fabric.
- Binding fabric.
- Sewing thread.
- Sewing machine.
- Hand-sewing needles.
- Scissors.
- Pins.
- Measuring tape.
- Tailor's chalk.
- Iron.

Procedure for making a bound opening

Step 1: Prepare the garment fabric

- Press the fabric.
- Mark the position and length of the opening.
- Ensure that the markings are accurate.

Step 2: Prepare the binding strips

- Cut two suitable strips of fabric.
- Ensure that they are long enough to cover the opening.
- The strips should have sufficient width for folding and stitching.
- Press the strips neatly.

Step 3: Position the binding strips

- Place the first binding strip along one side of the marked opening.
- Place the second strip along the opposite side.
- Ensure that the strips are correctly positioned.
- Pin them in place.

Step 4: Stitch the binding

- Stitch each binding strip securely along its edge.
- Maintain an even seam allowance.
- Ensure that the stitching is straight.

Step 5: Cut the opening

- Carefully cut through the centre of the marked slit.
- Make diagonal clips towards the stitching at the end.

- Avoid cutting through the stitches.

Step 6: Turn the binding

- Turn the binding strips to the wrong side.
- Fold the raw edges underneath.
- Ensure that the raw edges are completely enclosed.

Step 7: Finish the opening

- Press the opening.
- Secure the binding on the wrong side using hand or machine stitching.
- Reinforce the lower end of the opening.
- Remove loose threads.

Qualities of a well-made bound opening

1. The bindings are of equal width.
2. The edges are straight and smooth.
3. The raw edges are completely enclosed.
4. The stitching is strong and even.
5. The opening is symmetrical.
6. There are no puckers.
7. The lower end is properly reinforced.

2.3 CONTINUOUS WRAPPED OPENING

Meaning

A **continuous wrapped opening** is an opening finished using one continuous strip of fabric that is stitched around the slit and turned to the wrong side to enclose the raw edges.

It is commonly used on sleeve openings and lightweight garments.

Examples of garments where continuous wrapped openings are used

- Shirts.
- Blouses.
- Sleeves with cuffs.
- Children's dresses.
- Lightweight tops.
- School uniform shirts.

Features of a continuous wrapped opening

1. It uses one continuous strip of fabric.
2. The strip encloses the raw edges of the slit.
3. It produces a neat and durable finish.

4. It is suitable for narrow openings.
5. It may be used to prepare an opening before attaching a cuff.
6. The strip may be made from matching or contrasting fabric.

Materials and equipment required

- Main garment fabric.
- Fabric for the continuous strip.
- Sewing thread.
- Sewing machine.
- Scissors.
- Pins.
- Measuring tape.
- Tailor's chalk.
- Iron.
- Hand-sewing needle.

Procedure for making a continuous wrapped opening

Step 1: Prepare the fabric

- Press the garment fabric.
- Mark the position and length of the opening.
- Ensure that the fabric is placed correctly.

Step 2: Prepare the continuous strip

- Cut a long strip of suitable width.
- The strip should be long enough to cover both edges of the slit.
- Press the strip if necessary.

Step 3: Position the strip

- Place the strip on the right side of the garment fabric.
- Align it with the marked opening.
- Pin it securely.

Step 4: Stitch the strip

- Stitch along the marked lines on either side of the opening.
- Ensure that the stitching is even.
- Reinforce the stitching at the lower end.

Step 5: Cut the slit

- Cut through the centre of the marked opening.

- Make diagonal clips towards the end of the stitching.
- Avoid cutting through the stitches.

Step 6: Turn and wrap

- Pull the strip through the slit to the wrong side.
- Wrap the raw edges with the strip.
- Ensure that the raw edges are completely covered.

Step 7: Finish the opening

- Fold the raw edges of the strip underneath.
- Secure using machine or hand stitching.
- Press the opening flat.
- Inspect the finished work.

Qualities of a well-made continuous wrapped opening

- The strip covers all raw edges.
- The opening is even and symmetrical.
- The stitching is firm.
- The fabric is not puckered.
- The strip is securely attached.
- The lower end is reinforced.
- The opening lies flat after pressing.

2.4 FRONT OPENING

Meaning

A **front opening** is an opening constructed along the front part of a garment to enable the wearer to put on and remove the garment easily.

It may be finished using a placket, buttons, zips, hooks and eyes, snaps or other fastening methods.

Examples of garments with front openings

1. Shirts.
2. Blouses.
3. Dresses.
4. Jackets.
5. School uniforms.
6. Cardigans.
7. Coats.

Features of a front opening

- It is usually positioned at the centre front.

- It may extend partially or fully down the garment.
- It can be finished with overlapping fabric extensions called plackets.
- It may use different fastening methods.
- It can be functional and decorative.
- It should be strong enough to withstand frequent opening and closing.

Types of front opening finishes

1. Buttoned front opening

- Uses buttons and buttonholes.
- The garment edges overlap.
- Commonly found in shirts and blouses.

2. Zipped front opening

- Uses a zip fastener.
- It provides a secure and convenient closure.
- Commonly used in jackets, dresses and some skirts.

3. Hook-and-eye front opening

- Uses small metal hooks and eyes.
- It provides a discreet fastening.
- Often used in formal garments.

4. Press-stud front opening

- Uses press studs or snap fasteners.
- It is easy to open and close.
- Commonly used in children's clothing.

Materials and equipment required

- Main garment fabric.
- Matching fabric for the placket.
- Buttons or zip fastener.
- Sewing thread.
- Interfacing, where necessary.
- Sewing machine.
- Scissors.
- Pins.
- Measuring tape.
- Ruler.

- Tailor's chalk.
- Iron.
- Hand-sewing needles.

Procedure for making a buttoned front opening with a placket

Step 1: Prepare the garment

- Press the garment fabric.
- Mark the centre front line.
- Determine the length and width of the opening.

Step 2: Prepare the placket

- Measure and cut the required placket pieces.
- Ensure that the placket is of the correct length and width.
- Apply interfacing if necessary.
- Press the placket pieces.

Step 3: Attach the placket

- Position the placket along the front opening.
- Pin it securely.
- Stitch the placket to the garment.
- Maintain an even seam allowance.

Step 4: Turn and press

- Turn the placket to the required position.
- Fold and enclose raw edges.
- Press the placket flat.

Step 5: Secure the placket

- Machine-stitch along the edges.
- Ensure that the stitching is straight.
- Reinforce the upper and lower ends.

Step 6: Make buttonholes

- Mark the positions of the buttonholes.
- Space them evenly.
- Make buttonholes using a sewing machine or appropriate hand-stitching technique.
- Open the buttonholes carefully.

Step 7: Attach buttons

- Mark the corresponding button positions.

- Sew the buttons firmly.
- Check that they fit properly through the buttonholes.

Step 8: Final inspection

- Close the opening.
- Check that the edges overlap evenly.
- Press the garment.
- Remove loose threads.

Qualities of a well-made front opening

1. The two sides are even.
2. The placket is straight.
3. The buttons are securely attached.
4. Buttonholes are neat and correctly positioned.
5. The opening closes properly.
6. The stitching is strong.
7. The opening lies flat without puckering.
8. The finishing is attractive.

3.0 FACTORS TO CONSIDER WHEN CHOOSING GARMENT OPENINGS

The choice of an opening depends on several factors.

3.1 Type and design of the garment

- Different garments require different openings.
- A shirt may require a buttoned front opening.
- A child's dress may have a back or front opening.
- A skirt may have a side opening with a zip.

3.2 Purpose of the garment

- The intended use determines the type of opening.
- Work clothes require strong and functional openings.
- School uniforms require durable and easy-to-use openings.
- Formal clothes may require discreet and attractive openings.

3.3 Position of the opening

- The opening should be placed where it allows easy dressing and undressing.
- It may be positioned at the front, back, side, sleeve or neckline.
- Its position should not interfere with movement.

3.4 Type of fabric

- Thick fabrics may require stronger opening finishes.
- Lightweight fabrics require delicate and lightweight finishes.
- Stretch fabrics may require techniques that accommodate fabric movement.
- Fabrics that fray easily need secure edge finishing.

3.5 Cost of construction

- Some openings require more materials and labour than others.
- A simple faced slit may be economical for certain designs.
- A decorative opening may require additional fabric and accessories.
- The cost should be appropriate to the garment's value.

3.6 Skill of the person constructing the garment

- Some openings require advanced sewing skills.
- The maker should choose an opening they can construct accurately.
- Complex openings require careful measuring and stitching.

3.7 Age and needs of the wearer

- Children's garments should have easy-to-use openings.
- Elderly people may require openings that are easy to fasten.
- People with physical limitations may benefit from simple fastening systems.

3.8 Fashion and personal preference

- The opening should complement the garment design.
- Some people prefer buttons, while others prefer zips.
- Decorative openings may be chosen to improve appearance.

3.9 Durability

- Openings that experience frequent use should be strongly constructed.
- The fastening should withstand repeated opening and closing.
- The fabric around the opening should be reinforced.

3.10 Comfort and safety

- The opening should not scratch or irritate the skin.
- Fasteners should not have sharp or exposed edges.
- The opening should not restrict body movement.

3.11 Maintenance requirements

- The opening should be easy to clean and maintain.
- Fasteners should withstand appropriate laundering.

- The finishing should remain neat after repeated washing and ironing.

3.12 Availability of materials and equipment

- The selected opening should be suitable for locally available materials.
- The maker should consider the availability of buttons, zips, thread and fabric.
- Appropriate sewing equipment should be available.

4.0 QUALITIES OF A WELL-MADE GARMENT OPENING

A well-made garment opening should have the following qualities:

1. **Neatness:** It should have an attractive and clean finish.
2. **Accuracy:** It should be made according to the correct measurements.
3. **Symmetry:** Both sides should be balanced and even.
4. **Durability:** It should withstand repeated use.
5. **Strength:** The stitching should be firm and secure.
6. **Smoothness:** It should lie flat without wrinkles or puckers.
7. **Proper reinforcement:** Weak areas, especially the ends, should be strengthened.
8. **Comfort:** It should not cause discomfort to the wearer.
9. **Functionality:** It should allow easy dressing and undressing.
10. **Clean finishing:** There should be no exposed raw edges or loose threads.
11. **Appropriate positioning:** It should be placed correctly on the garment.
12. **Attractiveness:** It should complement the general garment design.

5.0 EQUIPMENT AND TOOLS USED IN MAKING GARMENT OPENINGS




Hanpel



5.1 Measuring tape

- Used to measure the length and width of openings.
- Helps ensure accurate measurements.

5.2 Fabric scissors

- Used for cutting fabric and binding strips.
- They should be sharp to produce clean edges.

5.3 Tailor's chalk

- Used to mark the position and measurements of openings.
- Marks should be removable without damaging the fabric.

5.4 Sewing machine

- Used to stitch the edges of openings.
- Produces strong and even stitches.

5.5 Hand-sewing needles

- Used for hand-finishing and securing facings.
- Different needle sizes are selected depending on fabric thickness.

5.6 Pins

- Used to hold fabric and facing pieces together before stitching.

- They help prevent fabric movement.

5.7 Sewing thread

- Used to join fabric pieces.
- Thread should match the fabric in strength and colour where appropriate.

5.8 Iron

- Used to press seams and openings.
- Helps produce neat and professional finishes.

5.9 Seam ripper

- Used to remove incorrect stitches.
- It should be handled carefully to avoid damaging fabric.

5.10 Ruler

- Used to measure and mark straight lines.
- Helps maintain accuracy during construction.

6.0 SAFETY PRECAUTIONS WHEN MAKING GARMENT OPENINGS

Safety is essential during clothing construction to prevent accidents and protect the environment.

6.1 Safety when using scissors

- Use sharp scissors suitable for fabric.
- Keep scissors closed when not in use.
- Pass scissors handle-first to another person.
- Avoid leaving scissors at the edge of a table.
- Do not use fabric scissors for cutting paper or other materials.

6.2 Safety when using sewing machines

- Keep fingers away from the sewing machine needle.
- Switch off the machine when changing needles.
- Do not operate a faulty machine.
- Avoid pulling fabric forcefully while stitching.
- Keep loose clothing away from moving machine parts.

6.3 Safety when using needles and pins

- Store needles and pins in a suitable pin cushion.
- Do not put needles or pins in the mouth.
- Count and collect pins after completing the work.
- Dispose of damaged needles safely.

6.4 Safety when ironing

- Use an appropriate temperature for the fabric.
- Place the iron on a stable surface.
- Avoid touching the hot soleplate.
- Switch off and unplug the iron after use.
- Allow the iron to cool before storing it.

6.5 Safety when cutting fabric

- Cut on a stable working surface.
- Keep fingers away from the cutting line.
- Handle small pointed scissors carefully.
- Avoid rushing when cutting near stitching.

7.0 ENVIRONMENTAL CONSERVATION DURING CLOTHING CONSTRUCTION

Clothing construction produces fabric clippings, thread pieces and other waste materials.

These should be handled responsibly.

7.1 Proper disposal of fabric clippings

- Collect fabric clippings in a designated container.
- Reuse suitable pieces for patchwork, appliqué and decorative work.
- Use larger leftovers for making accessories such as small bags.
- Dispose of unusable fabric waste appropriately.
- Avoid throwing fabric waste into drainage systems.

7.2 Proper disposal of thread waste

- Collect loose threads after stitching.
- Place thread waste in a waste container.
- Avoid leaving threads on the floor.
- Reuse suitable thread remnants for suitable craft activities.

7.3 Importance of proper waste disposal

1. Maintains cleanliness in the sewing room.
2. Prevents accidents caused by scattered needles and pins.
3. Reduces environmental pollution.
4. Encourages recycling and reuse.
5. Prevents blockage of drainage systems.
6. Promotes responsible use of resources.
7. Creates a safe working environment.

8.0 PRACTICAL ACTIVITY: MAKING SAMPLES OF GARMENT OPENINGS

Learning activity

Learners should make samples of the four types of openings studied.

Requirements

- Cotton fabric.
- Facing fabric.
- Binding fabric.
- Sewing thread.
- Sewing machine.
- Scissors.
- Measuring tape.
- Ruler.
- Tailor's chalk.
- Pins.
- Iron.

Procedure

1. Collect all the required materials and equipment.
2. Cut four suitable fabric samples.
3. Make a faced slit opening on the first sample.
4. Make a bound opening on the second sample.
5. Make a continuous wrapped opening on the third sample.
6. Make a front opening with a placket on the fourth sample.
7. Press all the samples neatly.
8. Inspect each opening for quality.
9. Mount the samples in a practical work folder.
10. Label each sample correctly.
11. Display the samples for peer assessment.
12. Discuss the strengths and weaknesses of each sample.

Suggested sample mounting layout

Sample	Type of opening	Label
1	Faced slit opening	Sample A
2	Bound opening	Sample B

3	Continuous wrapped opening	Sample C
4	Front opening	Sample D

Peer assessment checklist

Assessment criterion	Yes	No
Correct type of opening constructed	☐	☐
Accurate measurements used	☐	☐
Raw edges properly enclosed	☐	☐
Straight and even stitching	☐	☐
Opening properly reinforced	☐	☐
Opening pressed neatly	☐	☐
No unnecessary loose threads	☐	☐
Work labelled correctly	☐	☐

9.0 DIFFERENCES BETWEEN THE FOUR TYPES OF OPENINGS

Type	Main construction feature
Faced slit opening	Raw edges finished using a separate facing.
Bound opening	Raw edges enclosed using binding strips.
Continuous wrapped opening	One continuous strip wraps around the slit edges.
Front opening	Opening constructed at the front of a garment, often finished with a placket and fasteners.

10.0 SUMMARY OF THE SUB-STRAND

A garment opening is an important feature in clothing construction. It enables easy dressing and undressing while improving garment comfort, fit and appearance.

The four main types of openings studied are:

- Faced slit opening.
- Bound opening.
- Continuous wrapped opening.
- Front opening.

The choice of opening depends on the garment design, fabric type, intended purpose, wearer, cost, durability and construction skills.

A good garment opening should be neat, strong, accurate, attractive, comfortable and durable.

GRADE 11 HOME SCIENCE

REVISION EXERCISES

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.4: CLOTHING CONSTRUCTION PROCESSES – OPENINGS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Answer all questions. Choose the correct answer from the alternatives A, B, C and D.

1. What is a garment opening?

A. A decorative stitch used on garments.

B. A finished gap or slit that allows dressing and undressing.

C. A method of joining two pieces of fabric.

D. A technique of decorating fabric.

2. Which of the following is the main purpose of a garment opening?

A. Increasing fabric wastage.

B. Making garments heavier.

C. Facilitating dressing and undressing.

D. Preventing the garment from being washed.

3. A slit finished using a separate piece of fabric called a facing is known as:

A. Bound opening.

B. Faced slit opening.

C. Continuous wrapped opening.

D. Front opening.

4. Which garment is most likely to have a continuous wrapped opening at the sleeve?

A. Bed sheet.

B. Tablecloth.

C. Shirt.

D. Curtain.

5. The raw edges of a bound opening are enclosed using:

A. Buttons.

B. Narrow fabric strips.

C. Zips.

D. Hooks.

6. Which opening uses one continuous strip of fabric to finish the slit?

A. Continuous wrapped opening.

B. Faced slit opening.

C. Front opening.

D. Buttonhole opening.

7. What is the purpose of a facing in a faced slit opening?

A. To increase the garment length.

B. To decorate the garment only.

C. To enclose and finish the raw edges.

D. To make the fabric thicker throughout.

8. Which tool is most suitable for measuring the length of an opening?

A. Thimble.

B. Measuring tape.

C. Seam ripper.

D. Needle.

9. What is the purpose of clipping the corners when making a faced slit opening?

A. To increase fabric thickness.

B. To enable the facing to turn smoothly.

C. To shorten the garment.

D. To decorate the opening.

10. Which of the following should be avoided when cutting a slit opening?

A. Using sharp scissors.

B. Following marked lines.

C. Cutting through the stitching.

D. Cutting on a flat surface.

11. A placket is commonly associated with which type of garment opening?

A. Front opening.

B. Bound opening only.

C. Faced slit opening only.

D. Continuous wrapped opening only.

12. Which of the following is an example of a fastening used on a front opening?

A. Measuring tape.

B. Tailor's chalk.

C. Buttons.

D. Fabric scissors.

13. Which factor should be considered when selecting an opening for a school uniform?

A. Colour of the sewing machine.

B. Intended purpose of the garment.

C. Size of the classroom.

D. Number of learners in the school.

14. A garment made from lightweight fabric requires an opening finish that:

A. Is unnecessarily heavy.

B. Is appropriate for the lightweight fabric.

C. Uses thick cardboard.

D. Has exposed raw edges.

15. Why should the end of a slit opening be reinforced?

A. To make the garment shorter.

B. To prevent tearing.

C. To increase fabric wastage.

D. To make stitching invisible.

16. Which of the following is a quality of a well-made opening?

A. Uneven edges.

B. Exposed raw edges.

C. Neat and even stitching.

D. Loose threads.

17. Which equipment is used to remove incorrect stitches?

A. Seam ripper.

B. Measuring tape.

C. Ruler.

D. Iron.

18. What is the purpose of pressing an opening during construction?

A. To weaken the fabric.

B. To produce a neat and flat finish.

C. To remove the stitching.

D. To increase the size of the opening.

19. Which of the following openings is commonly finished with buttons and buttonholes?

A. Buttoned front opening.

B. Faced slit opening.

C. Bound opening.

D. Continuous wrapped opening.

20. Which factor is particularly important when choosing openings for elderly wearers?

A. Difficulty of fastening.

B. Ease of fastening.

C. High construction cost.

D. Decorative complexity.

21. Why should the binding strips of a bound opening be of equal width?

A. To make the opening symmetrical.

B. To increase fabric wastage.

C. To make the garment heavier.

D. To make stitching difficult.

22. Which of the following is an appropriate material for making a garment opening?

A. Sewing thread.

B. Building sand.

C. Cooking oil.

D. Charcoal.

23. A learner is making a bound opening. Which activity should be done after positioning the binding strips?

A. Washing the fabric immediately.

B. Stitching the binding strips securely.

C. Removing all the markings before sewing.

D. Cutting away the whole garment.

24. Which of the following contributes to the durability of a garment opening?

A. Weak stitching.

B. Poor-quality thread.

C. Proper reinforcement.

D. Exposed raw edges.

25. Which fastening is commonly used in children's garments?

A. Press studs.

B. Nails.

C. Staples.

D. Paper clips.

26. What should a learner do with fabric clippings after making garment openings?

A. Throw them into drainage channels.

B. Scatter them around the sewing room.

C. Collect and reuse or dispose of them properly.

D. Leave them on the floor.

27. Which of the following is a safety precaution when using a sewing machine?

A. Pulling fabric forcefully.

B. Keeping fingers away from the needle.

C. Touching the moving needle.

D. Operating a faulty machine.

28. Why should the maker consider the wearer's age when selecting an opening?

A. To ensure the opening meets the wearer's needs.

B. To increase the price of the garment.

C. To avoid taking measurements.

D. To make the garment difficult to wear.

29. Which opening is most appropriately described as having raw edges enclosed by a separate facing?

A. Bound opening.

B. Continuous wrapped opening.

C. Faced slit opening.

D. Front opening.

30. What is the best way to assess a completed garment opening?

A. Examine its neatness, strength and functionality.

B. Consider only the colour of the fabric.

C. Count the number of fabric pieces used.

D. Ignore the stitching quality.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Answer all questions.

1. (8 marks)

a) Define the term garment opening. (2 marks)

b) State four importance of garment openings in clothing construction. (4 marks)

c) Give two examples of garments that may have front openings. (2 marks)

2. (8 marks)

a) What is a faced slit opening? (2 marks)

b) State three materials or equipment required when making a faced slit opening. (3 marks)

c) Explain three qualities of a well-made faced slit opening. (3 marks)

3. (8 marks)

a) Define a bound opening. (2 marks)

b) Outline four main steps followed when constructing a bound opening. (4 marks)

c) State two reasons why the raw edges of an opening should be enclosed. (2 marks)

4. (8 marks)

a) Explain the meaning of a continuous wrapped opening. (2 marks)

b) State three characteristics of a continuous wrapped opening. (3 marks)

c) Give three garments in which continuous wrapped openings may be used. (3 marks)

5. (9 marks)

a) Define a front opening. (2 marks)

b) State three fastening methods that may be used on a front opening. (3 marks)

c) Explain four factors to consider when choosing an opening for a garment. (4 marks)

6. (9 marks)

A Grade 11 learner has completed making samples of different garment openings for a Home Science practical assessment.

a) State three qualities of a well-made garment opening. (3 marks)

b) Explain three safety precautions to observe when making garment openings. (3 marks)

c) State three ways of disposing of or reusing fabric and thread waste responsibly. (3 marks)

MARKING SCHEME

GRADE 11 HOME SCIENCE

REVISION EXERCISES

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.4: CLOTHING CONSTRUCTION PROCESSES – OPENINGS

TOTAL: 80 MARKS

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Award 1 mark for each correct answer.

Question	Answer
1	B
2	C
3	B
4	C
5	B
6	A
7	C
8	B
9	B
10	C
11	A
12	C
13	B
14	B
15	B
16	C
17	A
18	B
19	A
20	B
21	A
22	A
23	B

24	C
25	A
26	C
27	B
28	A
29	C
30	A

SECTION A TOTAL: 30 MARKS

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

QUESTION 1: INTRODUCTION TO GARMENT OPENINGS (8 MARKS)

a) Define the term garment opening. (2 marks)

A garment opening is a finished gap, slit or space made in a garment to allow the wearer to put on and remove the garment easily.

- Correct definition – 2 marks.

b) State four importance of garment openings in clothing construction. (4 marks)

Award 1 mark for each correct response.

1. Facilitate dressing and undressing.
2. Allow easy access into and out of garments.
3. Provide room for movement where necessary.
4. Allow garments to fit comfortably around the body.
5. Provide a means of fastening garments securely.
6. Enhance the appearance and style of garments.
7. Allow adjustment of garment fit.
8. Provide convenience when wearing or removing garments.

c) Give two examples of garments that may have front openings. (2 marks)

Award 1 mark each.

1. Shirts.
2. Blouses.
3. Jackets.
4. Coats.
5. Dresses.
6. Cardigans.
7. Uniform tops.

QUESTION 2: FACED SLIT OPENING (8 MARKS)

a) What is a faced slit opening? (2 marks)

A faced slit opening is a garment opening made by cutting a slit in the fabric and finishing its raw edges using a separate piece of fabric called a facing.

- Identification of slit opening – 1 mark.
- Use of a separate facing to finish raw edges – 1 mark.

b) State three materials or equipment required when making a faced slit opening. (3 marks)

Award 1 mark each.

1. Main garment fabric.
2. Facing fabric.
3. Sewing thread.
4. Sewing needle or sewing machine.
5. Fabric scissors.
6. Measuring tape or ruler.
7. Tailor's chalk or fabric marker.
8. Pins.
9. Iron and ironing board.

c) Explain three qualities of a well-made faced slit opening. (3 marks)

Award 1 mark for each well-explained quality.

1. Neat edges: The raw edges should be completely enclosed by the facing.
2. Even stitching: Stitching should be straight, secure and evenly spaced.
3. Flat finish: The facing should lie flat without unnecessary wrinkles or bulges.
4. Correct shape: The opening should have an even and symmetrical appearance.
5. Durability: The end of the slit should be properly reinforced to prevent tearing.
6. Functionality: The opening should allow easy dressing and undressing.

QUESTION 3: BOUND OPENING (8 MARKS)

a) Define a bound opening. (2 marks)

A bound opening is a garment opening in which the raw edges of a slit are enclosed and finished using narrow strips of fabric known as binding strips.

- Identification as a garment opening – 1 mark.
- Use of narrow fabric strips to enclose raw edges – 1 mark.

b) Outline four main steps followed when constructing a bound opening. (4 marks)

Award 1 mark for each correct step.

1. Mark the position and required length of the opening on the fabric.

2. Cut the slit carefully along the marked line.
3. Prepare and position the binding strips along the raw edges of the slit.
4. Stitch the binding strips securely to the fabric.
5. Turn the binding strips to the wrong side where required.
6. Fold and stitch the binding edges neatly to enclose the raw edges.
7. Press the completed opening to give it a neat finish.
8. Reinforce the end of the opening to prevent tearing.

c) State two reasons why the raw edges of an opening should be enclosed. (2 marks)

Award 1 mark each.

1. To prevent fraying of the fabric.
2. To give the opening a neat and professional finish.
3. To strengthen the edges.
4. To improve the durability of the garment.
5. To prevent the fabric from unraveling during washing and wearing.

QUESTION 4: CONTINUOUS WRAPPED OPENING (8 MARKS)

a) Explain the meaning of a continuous wrapped opening. (2 marks)

A continuous wrapped opening is a garment opening made by cutting a slit and finishing its raw edges using one continuous strip of fabric that is wrapped around the edges and stitched securely.

- Identification as a slit opening – 1 mark.
- Use of one continuous strip to enclose and finish the edges – 1 mark.

b) State three characteristics of a continuous wrapped opening. (3 marks)

Award 1 mark each.

1. It is finished using one continuous strip of fabric.
2. The strip encloses the raw edges of the slit.
3. It has a neat and smooth appearance when properly constructed.
4. It is usually narrow and suitable for small openings.
5. It requires accurate stitching and folding.
6. The end of the opening should be properly secured to prevent tearing.

c) Give three garments in which continuous wrapped openings may be used. (3 marks)

Award 1 mark each.

1. Shirts.
2. Blouses.
3. Dresses.
4. Children's garments.

5. Tunics.
6. Garments with sleeve openings or cuff slits.

QUESTION 5: FRONT OPENINGS (9 MARKS)

a) Define a front opening. (2 marks)

A front opening is an opening constructed along the front part of a garment to allow the wearer to put on and remove the garment easily. It may be secured using suitable fastenings.

- Identification of its position at the front of a garment – 1 mark.
- Explanation of its purpose – 1 mark.

b) State three fastening methods that may be used on a front opening. (3 marks)

Award 1 mark each.

1. Buttons and buttonholes.
2. Zips.
3. Press studs.
4. Hooks and eyes.
5. Velcro (hook-and-loop fasteners).
6. Ties or fabric loops.

c) Explain four factors to consider when choosing an opening for a garment. (4 marks)

Award 1 mark for each well-explained factor.

1. Type and purpose of the garment: The opening should be suitable for the garment's intended use, for example, a school uniform, dress or jacket.
2. Type of fabric: The opening should suit the weight, thickness and texture of the fabric. Lightweight fabrics require suitable lightweight finishes.
3. Age of the wearer: Children's and elderly people's garments may require simple openings that are easy to fasten and unfasten.
4. Ease of use: The opening should allow convenient dressing and undressing.
5. Durability: The opening should withstand frequent use, washing and strain.
6. Appearance and style: The opening should complement the design and appearance of the garment.
7. Cost: The materials and construction method should be affordable.
8. Fashion and personal preference: The opening should meet the wearer's preferences where appropriate.

QUESTION 6: QUALITY, SAFETY AND WASTE MANAGEMENT (9 MARKS)

a) State three qualities of a well-made garment opening. (3 marks)

Award 1 mark each.

1. Neat and even stitching.
2. Smooth and flat finish without unnecessary wrinkles.
3. Raw edges are completely enclosed.

4. Correct size and shape.
5. Properly reinforced ends.
6. Strong and durable construction.
7. Easy to open and close where fastenings are used.
8. Attractive and symmetrical appearance.

b) Explain three safety precautions to observe when making garment openings. (3 marks)

Award 1 mark for each well-explained precaution.

1. Handle scissors carefully: Use sharp fabric scissors correctly and keep them closed when not in use to prevent injuries.
2. Keep fingers away from the sewing machine needle: This prevents accidental needle injuries during stitching.
3. Switch off the sewing machine when not in use: This prevents accidental operation and injuries.
4. Use a seam ripper carefully: Direct it away from the body to avoid cuts.
5. Keep the working area tidy: Remove loose threads and fabric scraps to prevent slipping and accidents.
6. Store needles and pins safely: Keep them in a pin cushion or suitable container to prevent pricking injuries.
7. Avoid operating faulty equipment: Report damaged electrical equipment or sewing machines before use.

c) State three ways of disposing of or reusing fabric and thread waste responsibly. (3 marks)

Award 1 mark each.

1. Collect fabric scraps and use them to make patchwork items.
2. Reuse suitable fabric pieces for making pockets, decorations, small accessories or other sewing projects.
3. Use thread remnants for suitable craft activities.
4. Place unusable fabric and thread waste in designated waste bins.
5. Separate recyclable textile waste from other waste.
6. Donate clean, reusable fabric pieces for appropriate craft or educational activities.
7. Avoid throwing fabric and thread waste into drainage channels or water sources.

GRADE 11 HOMESCIENCE

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.5: CLOTHING CONSTRUCTION PROCESSES – SEWING NOTIONS

Introduction to the sub-strand

Clothing construction involves various processes used to make garments and household articles from fabrics. These processes include measuring, cutting, joining fabric pieces, finishing seams, making openings and decorating finished articles.

During clothing construction, a variety of small materials and accessories are used to make garments functional, attractive, durable and comfortable. These materials are known as **sewing notions**.

Sewing notions play an important role in garment construction because they help to:

Fasten and secure openings in garments.

Decorate and improve the appearance of garments.

Strengthen edges and seams.

Improve the functionality and durability of clothing.

Give garments a professional and attractive finish.

In this sub-strand, learners explore different sewing notions, particularly fastenings and trimmings, learn how to select them and acquire practical skills in attaching them to garments and household articles.

1.0 Meaning of sewing notions

Definition of sewing notions

Sewing notions are small materials, accessories, tools and decorative items used during sewing and clothing construction to make, fasten, finish, strengthen, repair or decorate garments and household articles.

They are generally classified into two major categories:

Fastenings.

Trimmings.

1.1 Classification of sewing notions

Category	Meaning	Examples
Fastenings	Items used to open, close or secure garments and their openings.	Buttons, zips, hooks and eyes, press studs, Velcro and ties.
Trimmings	Materials added to garments for decoration, finishing or reinforcement.	Lace, ribbons, binding and appliqué.

Importance of distinguishing between fastenings and trimmings

Fastenings primarily serve the purpose of opening, closing or securing garments.

Trimmings mainly improve appearance, finish edges or strengthen parts of garments.

Some sewing notions may perform more than one function. For example, binding can both finish and reinforce an edge.

2.0 FASTENINGS

2.1 Meaning of fastenings

Fastenings are sewing notions used to join, secure or close two parts of a garment or household article temporarily or permanently.

They are commonly attached to openings to allow the wearer to put on, remove or adjust a garment easily.

Examples of fastenings:

Buttons and buttonholes.

Button loops.

Zips (zippers).

Hooks and eyes.

Hooks and bars.

Tie strings.

Press studs (snap fasteners).

Velcro (hook-and-loop fasteners).

2.2 Buttons and buttonholes

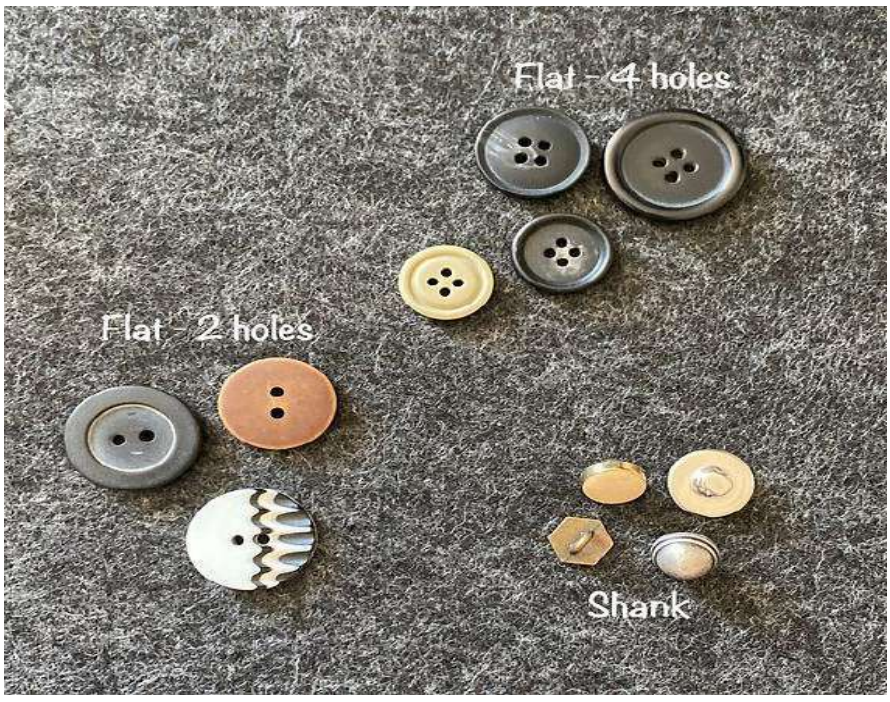
Meaning of a button

A button is a small fastening accessory, usually made of plastic, metal, wood, shell, fabric or other materials, attached to one part of a garment and passed through a buttonhole or loop to secure an opening.

Meaning of a buttonhole

A buttonhole is a specially made and finished slit or opening in fabric through which a button passes to fasten a garment.

Types of buttons







1. **Flat buttons**

These buttons have a flat surface and two or four holes.

They are attached to fabric by passing a needle and thread through the holes.

They are commonly used on shirts, blouses, dresses and children's clothing.

They lie close to the fabric surface.

2. **Shank buttons**

These buttons have a small loop or shank at the back instead of holes on the front.

The thread passes through the shank when attaching the button.

They are suitable for thick fabrics because they provide space between the button and fabric.

They are commonly used on coats, jackets and heavy garments.

3. **Decorative buttons**

These buttons are mainly selected for their attractive appearance.

They may have unusual shapes, colours, patterns and designs.

They are used to improve the appearance of garments.

Examples include flower-shaped and pearl-effect buttons.

4. **Covered buttons**

These are buttons covered with fabric to match or complement a garment.

They give clothing a coordinated and neat appearance.

They are commonly used on dresses, blouses and formal wear.

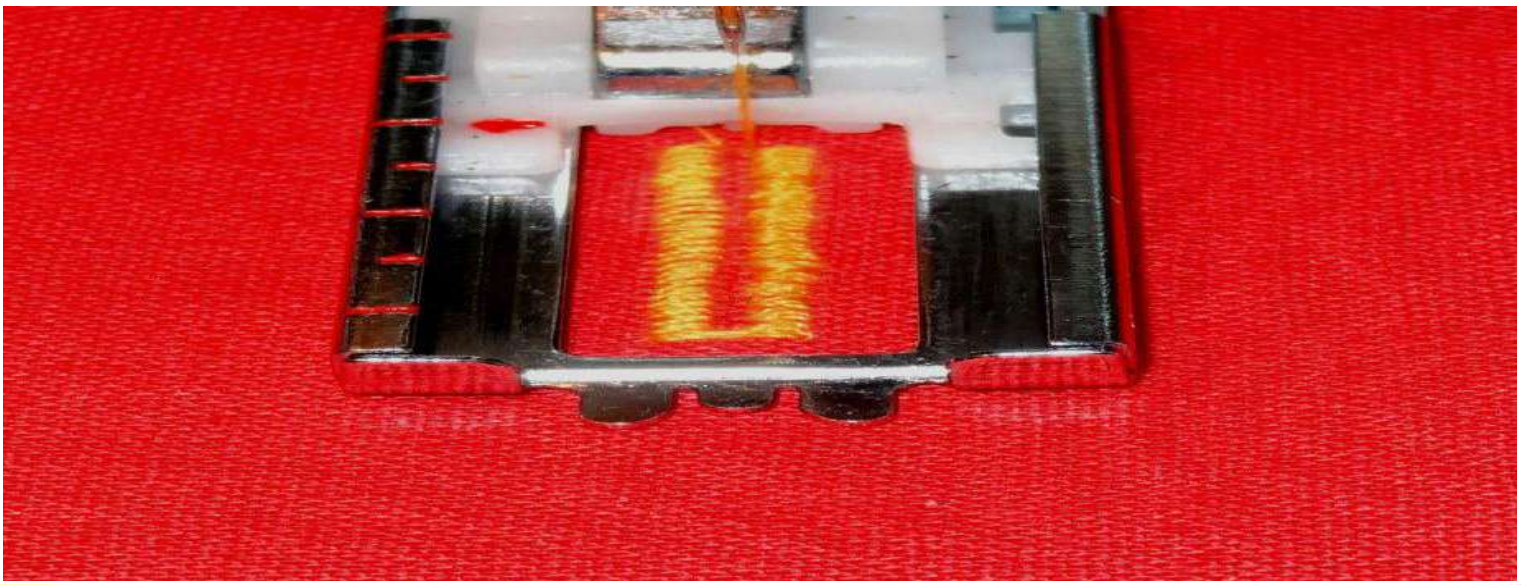
5. **Metal buttons**

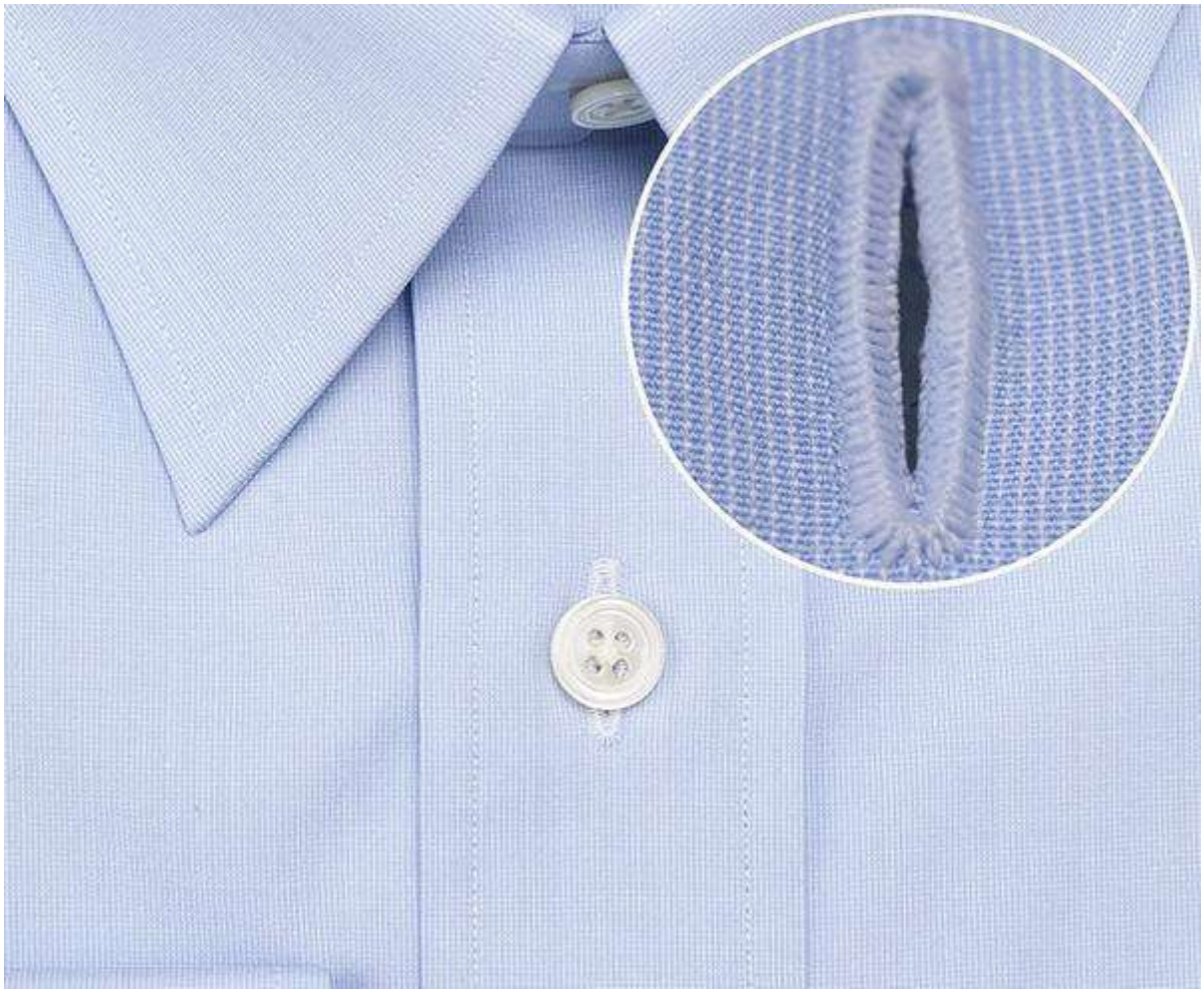
These are made from metal or metal alloys.

They are strong and durable.

They are commonly used on jeans, trousers, jackets and uniforms.

Types of buttonholes







1. **Worked buttonholes**

These are made by cutting a slit in the fabric and finishing its edges with closely worked stitches.

They prevent the fabric from fraying.

They may be worked by hand or using a sewing machine.

2. **Machine-made buttonholes**

These are produced using a sewing machine with a buttonhole function.

The machine makes closely spaced stitches around the slit.

They provide uniform and neat finishes.

They are suitable for mass garment production.

3. **Bound buttonholes**

These are made by covering the edges of an opening with narrow strips of fabric.

They create a neat, professional and decorative finish.

They are commonly used on tailored jackets, coats and formal garments.

Button loops

A button loop is a small loop made from fabric, cord or thread through which a button passes to close a garment.

It is used where a conventional buttonhole may not be suitable.

It is common on dresses, blouses and decorative garments.

It can be made using narrow bias fabric, rouleau strips or decorative cord.

It can be positioned on the edge or facing of a garment.

Uses of buttons and buttonholes

Fastening shirt fronts.

Closing blouse openings.

Securing cuffs and sleeve openings.

Fastening waistbands.

Closing pockets and decorative flaps.

Decorating garments.

Securing children's clothing.

Advantages of buttons

They are readily available in different sizes and designs.

They are relatively inexpensive.

They are easy to replace when damaged.

They are suitable for many types of garments.

They can be decorative as well as functional.

Limitations of buttons

They may become loose if poorly attached.

Buttonholes may stretch with repeated use.

They may take longer to fasten than some modern fasteners.

Small buttons may be difficult for young children or people with limited hand dexterity.

2.3 Zips (zippers)

Definition

A zip is a fastening consisting of two rows of interlocking teeth or elements attached to fabric tapes and operated by a sliding device called a slider.

The slider joins or separates the two rows of teeth to close or open a garment.







Main parts of a zip

Slider: The moving part that joins or separates the teeth.

Puller: The part held by the fingers to move the slider.

Teeth or elements: The interlocking parts that secure the opening.

Tape: The fabric strips onto which the teeth are attached.

Top stop: Prevents the slider from moving beyond the top of the zip.

Bottom stop: Prevents the slider from moving beyond the bottom.

Insertion pin and box: Found on some separating zips and used to join the two sides.

Types of zips

1. **Metal zips**

Have teeth made of metal.

They are strong and durable.

They are commonly used on jeans, jackets, bags and heavy garments.

2. **Nylon coil zips**

Have interlocking nylon or polyester coil elements.

They are flexible and lightweight.

They are suitable for dresses, skirts, trousers and bags.

3. **Plastic moulded zips**

Have teeth made from moulded plastic.

They are available in different colours and sizes.

They are commonly used on jackets, sportswear and bags.

4. **Invisible zips**

Have teeth concealed behind the zip tape when closed.

They are designed to be almost invisible from the outside.

They are commonly used on dresses, skirts and formal garments.

5. **Separating zips**

Can be completely separated into two parts.

They are used on garments that need to open fully.

Examples include jackets, hoodies and some coats.

6. **Closed-end zips**

Remain joined at one end.

They are commonly used on skirts, trousers, dresses and pockets.

Uses of zips

Closing skirt openings.

Fastening trouser flies.

Closing dress openings.

Fastening jackets and coats.

Closing bags and purses.

Securing cushion covers.

Fastening school and travel bags.

Advantages of zips

They provide a firm and secure fastening.

They are quick and convenient to operate.

They create a neat finish when correctly attached.

They are available in different colours, lengths and materials.

They are suitable for many garment designs.

Limitations of zips

They may jam if dirt or loose threads enter the teeth.

Teeth may break or become misaligned.

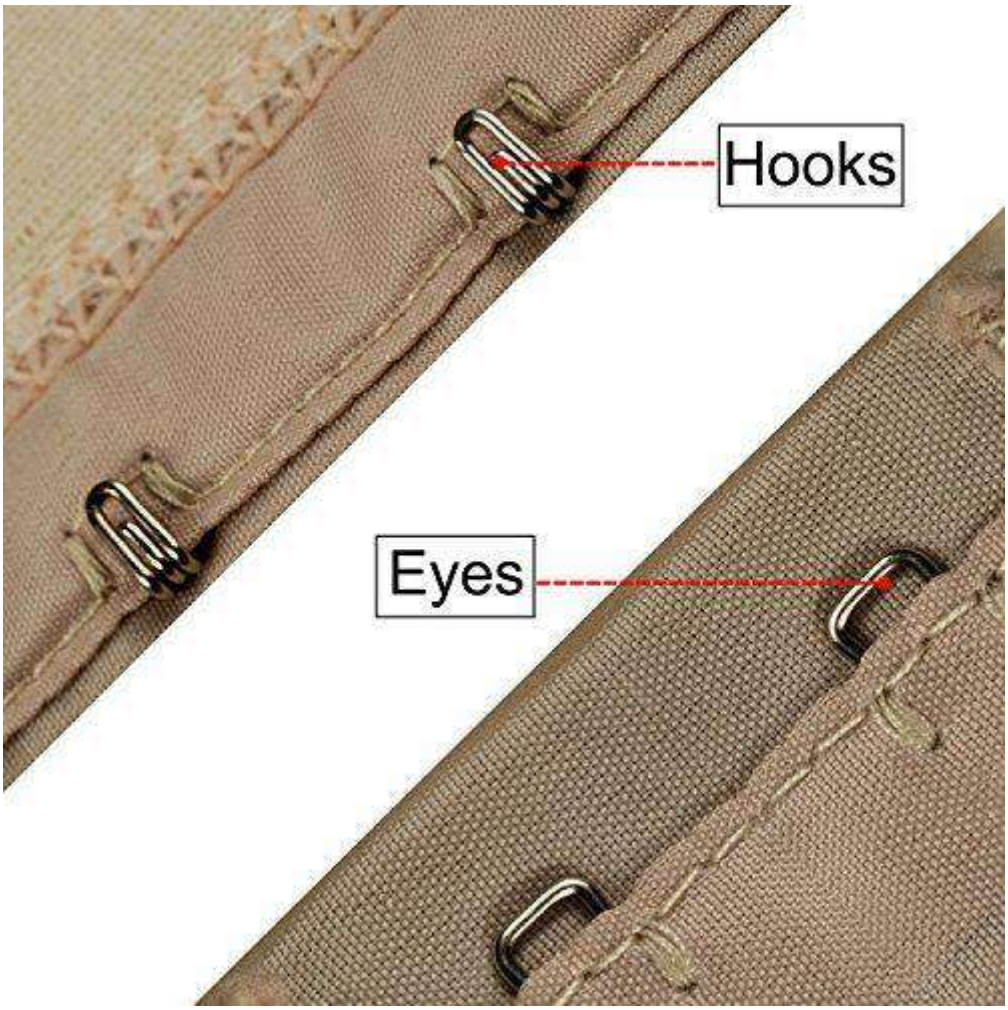
Poorly attached zips may distort the fabric.

Some zips are difficult to repair when damaged.

2.4 Hooks and eyes

Definition

Hooks and eyes are small metal fasteners consisting of a curved hook and a corresponding loop or eye. The hook is attached to one side of an opening while the eye is attached to the opposite side.



Types of hooks and eyes

1. **Small hooks and eyes**

Used on lightweight garments.

Commonly attached to blouses, dresses and skirts.

They provide a discreet fastening.

2. **Large hooks and eyes**

Used on heavier garments.

Suitable for coats, waistbands and tailored clothing.

They provide stronger support.

3. **Flat hooks and eyes**

Lie relatively flat against the garment.

They provide a neat finish.

They are suitable for garments requiring concealed fastenings.

4. **Sew-on hooks and eyes**

Have small holes or loops through which stitches are passed.

They are attached securely by hand.

Uses of hooks and eyes

Securing waistbands on skirts and trousers.

Fastening the top of a skirt zip.

Closing dress openings.

Securing blouse necklines.

Providing additional security to garment openings.

Advantages

They are small and discreet.

They are inexpensive.

They are easy to attach by hand.

They provide additional security to openings.

They are suitable for garments requiring concealed fastenings.

Limitations

They may become loose if poorly attached.

They can be difficult to operate for people with limited finger dexterity.

They may rust if made from unsuitable metal and exposed to moisture.

They may not be strong enough for openings under heavy tension.

2.5 Hooks and bars

Definition

Hooks and bars are metal fastening devices consisting of a hook and a specially shaped metal bar. The hook catches onto the bar to secure two parts of a garment.



Characteristics

They are generally stronger than small hooks and eyes.

They are suitable for areas requiring firm fastening.

They are attached using stitches through the provided holes.

They may be concealed within garment openings.

Uses

Fastening trouser waistbands.

Securing skirt waistbands.

Closing tailored garments.

Fastening heavy garments.

Providing additional support to zip openings.

Advantages

They provide a firm fastening.

They are durable when properly maintained.

They are suitable for areas under moderate tension.

They give a neat finish when concealed.

Limitations

They require accurate positioning.

They may be uncomfortable if poorly placed.

They can become loose through repeated use.

2.6 Tie strings

Definition

Tie strings are narrow lengths of fabric, ribbon, cord or tape attached to garments or articles and tied together to secure or adjust them.







Types of tie strings

1. **Fabric ties**

Made from strips of fabric.

They can be cut on the straight grain or bias.

They are commonly used on dresses, aprons and blouses.

2. **Ribbon ties**

Made from decorative ribbon.

They improve the appearance of garments.

They are commonly used on dresses and children's clothing.

3. **Cord ties**

Made from twisted or braided cords.

They are commonly used on hoodies, tracksuits and drawstring bags.

4. **Drawstrings**

Passed through a casing or channel in a garment.

They are pulled to tighten or loosen an opening.

They are commonly used on trousers, shorts, skirts and sportswear.

Uses of tie strings

Adjusting waistbands.

Fastening aprons.

Securing dressing gowns.

Closing drawstring bags.

Adjusting necklines.

Decorating dresses and children's garments.

Advantages

They are simple to make and attach.

They allow adjustment of garment sizes.

They can be decorative.

They are relatively inexpensive.

They are suitable for different fabric types.

Limitations

They may become untied during wear.

They may fray if their ends are not finished.

They may be inconvenient for people who cannot tie knots easily.

Long strings may present safety risks, particularly to young children.

2.7 Press studs (snap fasteners)

Definition

Press studs are fastening devices consisting of two matching parts that snap together when pressed and separate when pulled apart.



Cap



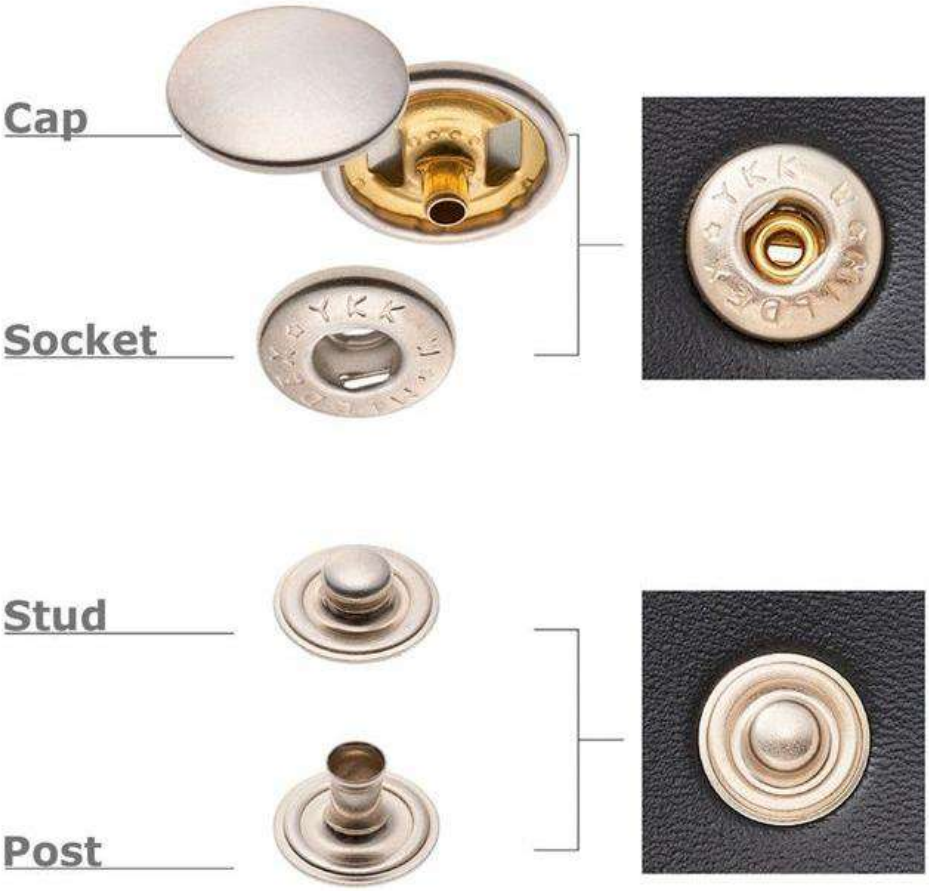
Socket Female



Male Stud



Post





Main parts of a press stud

Depending on the design, a typical press stud consists of:

A socket.

A stud.

A cap.

A fastening post or attachment component.

Types of press studs

1. **Sew-on press studs**

Have small holes through which a needle and thread pass.

They are attached by hand.

They are suitable for lightweight garments.

2. **Metal press studs**

Made from metal.

They are durable and provide firm fastening.

They are used on jackets, children's clothing and accessories.

3. **Plastic press studs**

Made from plastic.

They are available in different colours.

They are commonly used on baby clothes, children's garments and lightweight clothing.

4. **Prong-type press studs**

Attached by pressing or using a special setting tool.

They are commonly used on bags, jackets and other accessories.

Uses of press studs

Fastening baby clothes.

Closing shirt and jacket openings.

Securing pockets and flaps.

Fastening children's garments.

Closing cushion covers and other household articles.

Advantages

They are easy and quick to operate.

They provide a neat fastening.

They are available in different sizes and materials.

They are suitable for garments where buttons may be inconvenient.

Limitations

They may become loose after repeated use.

They may damage delicate fabrics if attached incorrectly.

Some types require special tools for attachment.

2.8 Velcro (hook-and-loop fasteners)

Definition

Velcro is a fastening system made up of two strips: one containing tiny hooks and the other containing soft loops. When pressed together, the hooks catch onto the loops and secure the two surfaces.



Components

Hook strip: Contains tiny stiff hooks.

Loop strip: Contains soft loops that catch onto the hooks.

Types of Velcro

Sew-on Velcro – attached to fabric using stitches.

Adhesive-backed Velcro – has a sticky backing for suitable surfaces.

Industrial-strength Velcro – designed for heavier-duty applications.

Specialised low-profile Velcro – designed for applications requiring less bulk.

Uses of Velcro

Fastening school shoes.

Securing children's clothing.

Closing jackets and sportswear.

Fastening bags and pouches.

Securing medical and support garments.

Adjusting cuffs and waistbands.

Fastening household articles such as cushion covers.

Advantages

It is easy to fasten and unfasten.

It is suitable for people with limited hand dexterity.

It allows quick adjustment.

It is available in different colours and widths.

It is useful in children's clothing.

Limitations

It may collect dust, hair and lint.

Its gripping ability may reduce with repeated use.

It may produce noise when separated.

It may catch on delicate fabrics and cause damage.

2.9 Comparison of different fastenings

Fastening	Main characteristic	Common application
Buttons	Pass through buttonholes or loops.	Shirts and blouses
Zips	Interlocking teeth operated by a slider.	Skirts, trousers and dresses
Hooks and eyes	Hook catches onto a small eye.	Skirts and blouses
Hooks and bars	Hook catches onto a metal bar.	Waistbands
Tie strings	Two strings are tied together.	Aprons and dressing gowns
Press studs	Two parts snap together.	Baby clothes and jackets
Velcro	Hooks attach to loops.	Children's shoes and sportswear

2.10 General factors to consider when choosing fastenings

The choice of fastening depends on the garment, fabric, intended wearer and purpose of the article.

1. Type and purpose of the garment

Different garments require different fastenings.

A school uniform shirt may require buttons.

A skirt may require a zip and hook-and-eye fastening.

A winter jacket may require a strong separating zip.

2. Type and weight of fabric

Heavy fabrics require strong fastenings.

Lightweight fabrics require small and lightweight fastenings.

Metal zips may be appropriate for denim.

Small plastic buttons may be suitable for lightweight cotton blouses.

3. Colour of the fabric

The fastening should match or complement the fabric colour.

Matching colours create a coordinated appearance.

Contrasting colours may be selected for decorative purposes.

4. Size and weight of the fastening

The size should be proportional to the garment.

Large buttons may overwhelm a lightweight blouse.

Very small fastenings may not adequately secure heavy garments.

5. Position of the opening

The fastening should suit the location of the opening.

A zip may be suitable for a long skirt opening.

Hooks and eyes may be suitable for a waistband.

Press studs may be suitable for a pocket flap.

6. Intended wearer

The age and physical abilities of the wearer should be considered.

Velcro may be suitable for young children because it is easy to operate.

Elderly people may prefer easy-to-operate fastenings.

Clothing for people with limited hand movement should have accessible fastenings.

7. Durability and strength

The fastening should withstand repeated opening and closing.

It should not break easily.

It should maintain its fastening ability during normal use.

8. Comfort and safety

Fastenings should not scratch, prick or irritate the wearer.

Sharp metal parts should not come into direct contact with the skin.

Long drawstrings should be avoided where they may cause entanglement.

Fastenings should not create unnecessary pressure on the body.

9. Cost and availability

The cost should be within the clothing construction budget.

The selected fastening should be readily available locally.

The cost should be reasonable in relation to the garment's value.

10. Ease of attachment and maintenance

Consider whether the fastening can be attached using available equipment and skills.

It should be easy to clean and maintain.

Replacement parts should be accessible.

11. Fashion and current trends

Fastenings should complement the garment's design.

Decorative buttons and coloured zips can enhance modern fashion designs.

The selected fastening should suit the intended style.

12. Ease of laundering

Fastenings should withstand the washing and ironing methods used on the garment.

They should not rust, melt, discolour or become damaged during cleaning.

2.11 General procedure for attaching fastenings

Before attaching any fastening, the garment or fabric should be properly prepared.

Preparation

Select a suitable fastening.

Gather the necessary sewing tools and materials.

Examine the garment opening.

Measure and mark the correct position.

Finish the raw edges of the opening.

Check that both sides of the opening are correctly aligned.

Attach the fastening using the appropriate technique.

General tools and materials

Needle.

Sewing thread.

Sewing machine.

Scissors.

Tape measure.

Ruler.

Tailor's chalk.

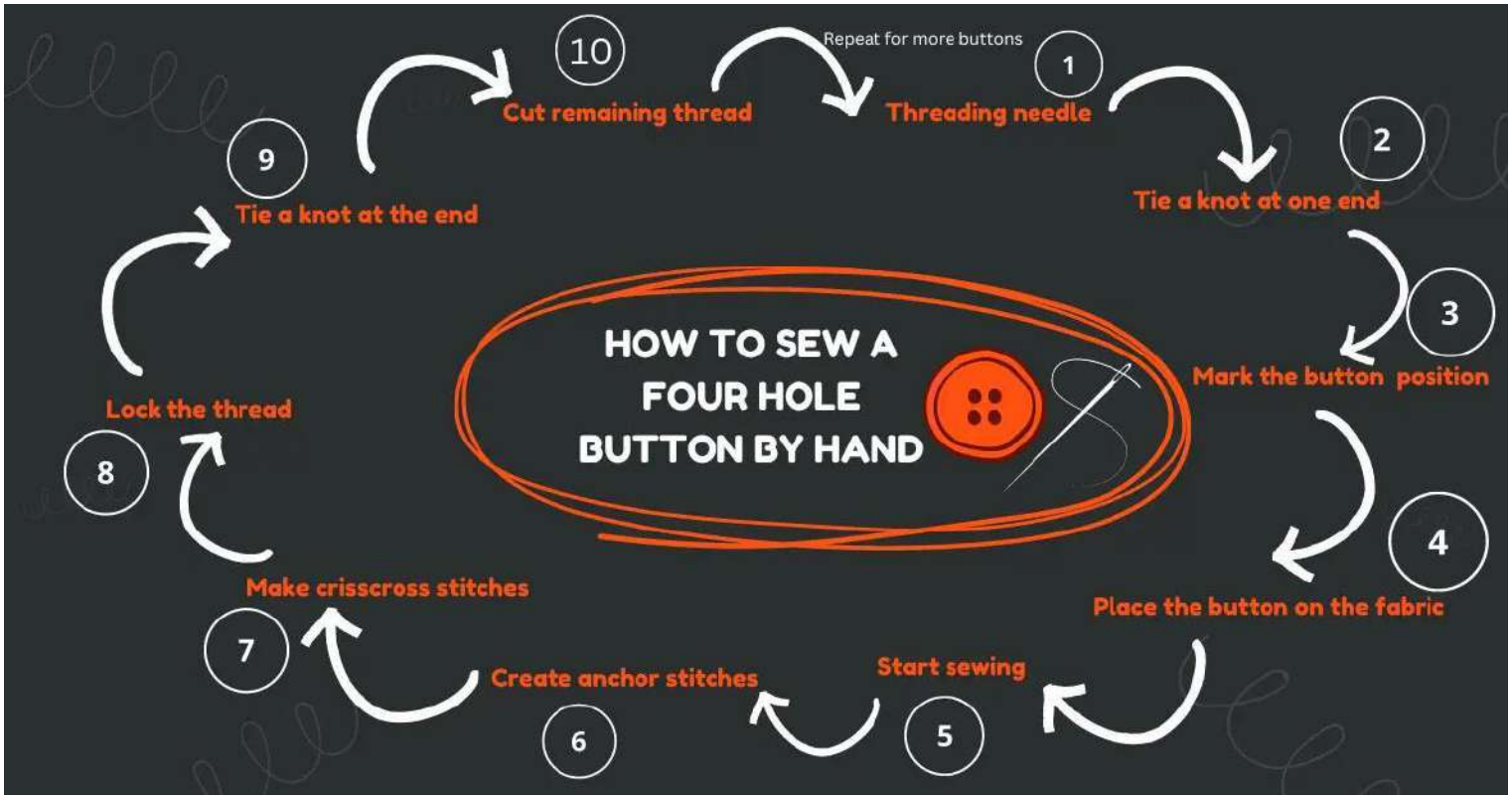
Pins.

Seam ripper.

Thimble.

Appropriate fastening.

2.12 Procedure for attaching buttons



Select a button of suitable size, colour and material.

Thread a needle using a suitable sewing thread.

Secure the thread with a knot.

Position the button at the marked point.

Pass the needle through one buttonhole from the wrong side of the fabric.

Pass the needle through the corresponding hole and pull the thread gently.

Repeat the process several times to secure the button.

For a four-hole button, sew through the holes in a parallel or crossed pattern.

Leave a small amount of space between the button and fabric where necessary to allow the button to pass through the buttonhole.

Form a thread shank if required.

Fasten off the thread securely on the wrong side.

Trim excess thread.

Test the button by passing it through the buttonhole.

Points to observe

The button should be firmly attached.

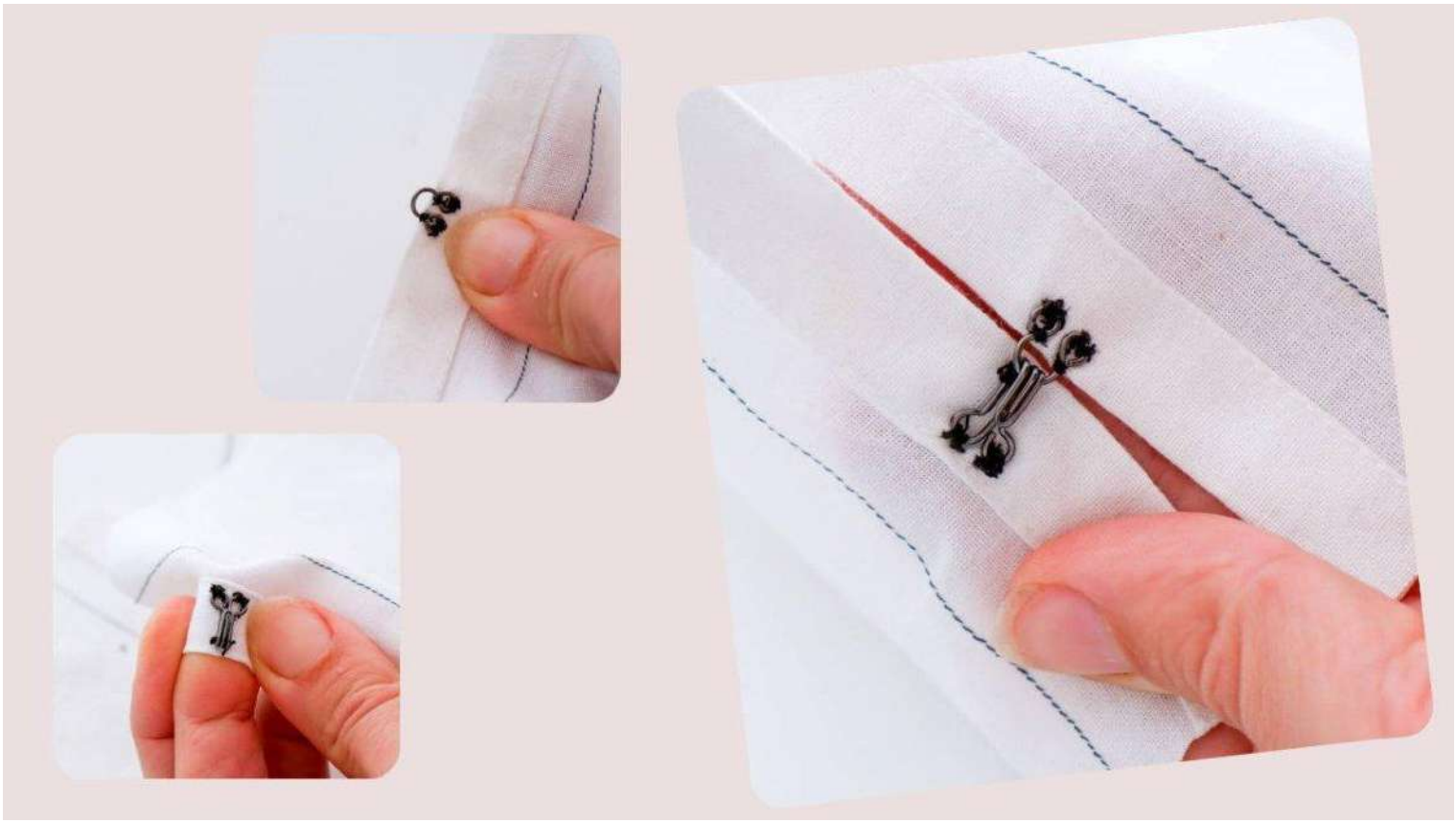
The stitches should not be too tight.

The button should align with the buttonhole.

The thread should match or complement the fabric.

The button should not wobble excessively.

2.13 Procedure for attaching hooks and eyes



Select a suitable hook and eye.

Mark the position of the fastening on both sides of the opening.

Position the hook on one side of the garment.

Secure the hook by passing stitches through its attachment loops.

Place the eye directly opposite the hook.

Attach the eye using small, firm stitches.

Fasten off the thread neatly.

Close the garment to check alignment.

Make adjustments if necessary.

Points to observe

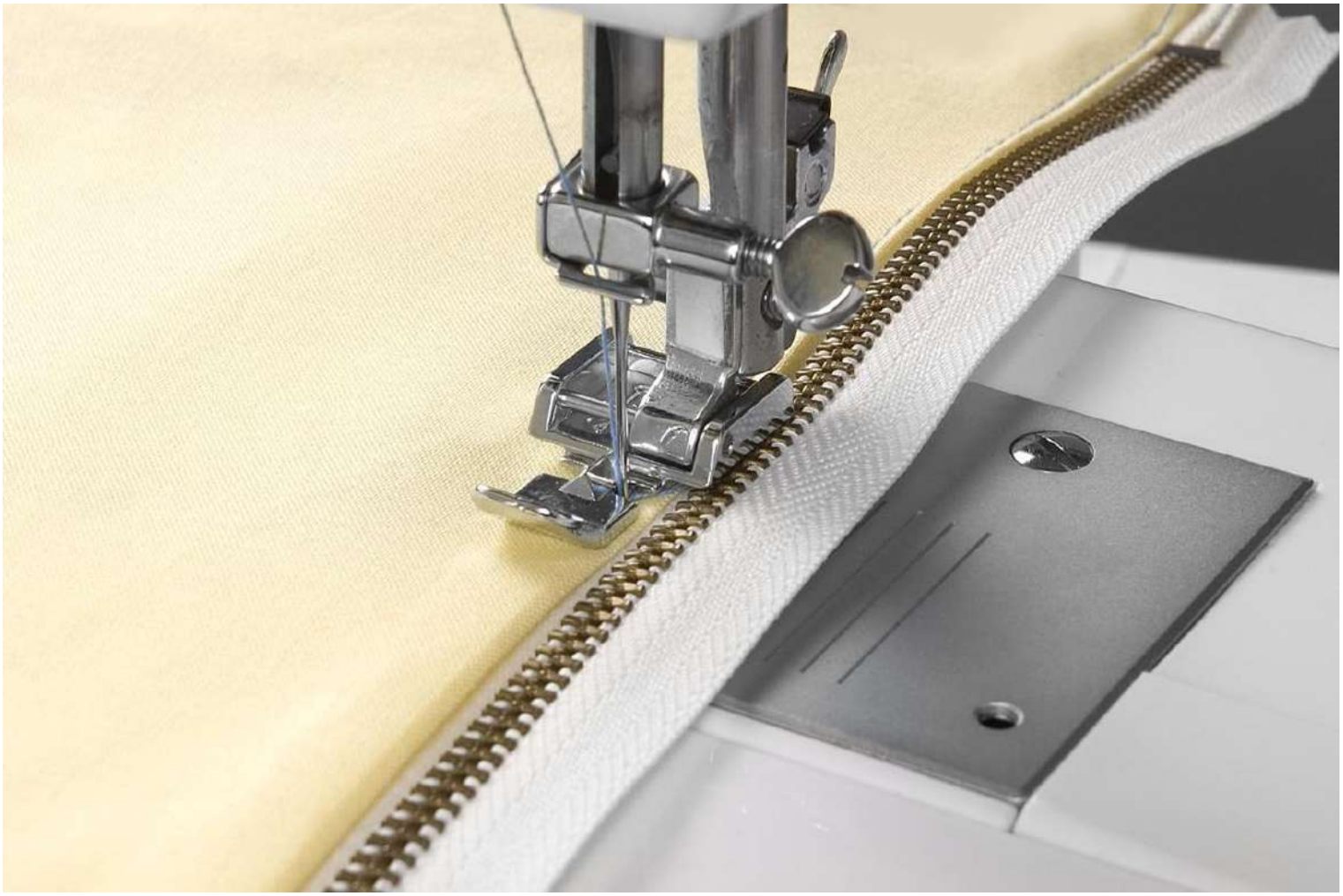
The hook and eye should be directly opposite each other.

They should not be too tight or too loose.

Stitches should be concealed as much as possible.

The fastening should not distort the garment.

2.14 Procedure for attaching a zip



Select a zip of the correct type, length and colour.

Prepare and finish the garment opening.

Press the seam allowances according to the chosen zip insertion method.

Position the zip beneath or between the fabric edges as required.

Pin or tack the zip in place.

Attach a zipper foot to the sewing machine.

Stitch along one side of the zip tape.

Stitch along the opposite side, keeping the stitching even.

Secure the ends with appropriate backstitching.

Remove temporary tacking stitches.

Open and close the zip to test its movement.

Press the finished area carefully, following the fabric and zip manufacturer's instructions.

Points to observe

The zip should be straight.

The two sides should be evenly positioned.

The stitching should not catch the teeth.

The zip should open and close smoothly.

The fabric should not pucker around the opening.

2.15 Procedure for attaching press studs

Select the appropriate size and type of press stud.

Identify the correct position on both sides of the opening.

Mark the positions accurately.

Separate the two matching components.

Position the first component on one side.

Sew it securely if it is a sew-on type, or use the appropriate setting tool for a prong type.

Attach the matching component to the opposite side.

Check that both parts align correctly.

Press the two components together.

Pull them apart to test their fastening ability.

2.16 Procedure for attaching Velcro

Select Velcro of suitable width, colour and strength.

Measure the length required.

Cut the hook and loop strips to the required size.

Mark their positions on opposite sides of the opening.

Position the hook strip on one side.

Position the loop strip on the corresponding side.

Pin or tack the strips to hold them in position.

Stitch around the edges of each strip.

Reinforce the corners where necessary.

Remove pins or tacking stitches.

Press the two strips together to test the fastening.

Points to observe

The hook and loop strips must align correctly.

The stitching should be firm and even.

The strips should not be twisted.

Avoid catching the surrounding fabric while stitching.

2.17 Procedure for attaching tie strings

Select suitable fabric, ribbon or cord.

Determine the required length.

Cut the strings accurately.

Finish the ends to prevent fraying.

Mark the attachment positions.

Position the strings on the garment.

Secure them using strong stitching.

Reinforce the attachment points.

Tie the strings together to test their function.

Trim any unnecessary loose threads.

3.0 TRIMMINGS

3.1 Meaning of trimmings

Trimmings are decorative or functional materials attached to garments and household articles to improve their appearance, finish raw edges, strengthen fabric sections or add design features.

They are used to give garments individuality, beauty and a professional finish.

Examples of trimmings

Lace.

Ribbons.

Binding.

Appliqué.

3.2 Lace

Definition

Lace is a delicate decorative fabric made by interlacing, twisting or looping threads to form openwork patterns.

It may be made from cotton, polyester, nylon, silk or other fibres.







Types of lace

1. **Cotton lace**

Made mainly from cotton fibres.

It is soft and comfortable.

It is suitable for children's clothing, blouses and household articles.

2. **Nylon lace**

Made from synthetic nylon fibres.

It is generally lightweight and durable.

It is commonly used on dresses, lingerie and decorative garments.

3. **Polyester lace**

Made from polyester fibres.

It is relatively strong and resistant to creasing.

It is commonly used in fashion garments and decorations.

4. **Embroidered lace**

Contains decorative embroidered patterns.

It is used to enhance the appearance of garments.

It is suitable for dresses, blouses and special-occasion clothing.

5. **Crocheted lace**

Made using crochet techniques.

It may be handmade or machine produced.

It is used on clothing, table linen and household articles.

6. **Eyelet lace**

Contains small decorative holes arranged in patterns.

It provides a light and attractive appearance.

It is commonly used on children's clothes and summer garments.

Uses of lace

Decorating dress hems.

Finishing blouse edges.

Decorating sleeves and necklines.

Embellishing curtains.

Decorating tablecloths.

Finishing pillowcases.

Decorating children's garments.

Advantages of lace

It improves the appearance of garments.

It is available in different designs and colours.

It can be used to create elegant clothing.

It adds decorative value to simple garments.

Limitations of lace

Delicate lace can tear easily.

Some types require special washing methods.

It may fray if not properly secured.

It can be expensive depending on its quality and design.

3.3 Ribbons

Definition

A ribbon is a narrow strip of fabric, usually woven or knitted, used for decoration, fastening, edging or finishing garments and household articles.







Types of ribbons

1. **Satin ribbon**

Has a smooth and shiny surface.

It is commonly used for decorative purposes.

It is suitable for dresses, bows and gift decorations.

2. **Grosgrain ribbon**

Has a ribbed texture.

It is relatively firm and durable.

It is used for waistbands, bows and garment decorations.

3. **Cotton ribbon**

Made from cotton fibres.

It is soft and suitable for many washable articles.

It is used on aprons, children's clothes and household textiles.

4. **Organza ribbon**

It is lightweight and transparent or semi-transparent.

It creates delicate decorative effects.

It is used for dresses, bows and special-occasion garments.

5. **Velvet ribbon**

Has a soft, raised surface.

It gives garments a rich decorative appearance.

It is used on dresses, coats and accessories.

Uses of ribbons

Making decorative bows.

Decorating dresses and blouses.

Finishing garment edges.

Decorating children's clothing.

Creating waist ties.

Decorating curtains and cushions.

Identifying or labelling household articles.

Advantages

Available in many colours and widths.

Easy to attach by hand or machine.

Can be used for decoration and fastening.

Relatively easy to replace.

Enhances garment appearance.

Limitations

Some ribbons fray at the edges.

Satin ribbons may slip during sewing.

Some synthetic ribbons may melt under excessive heat.

They may lose their shape if poorly maintained.

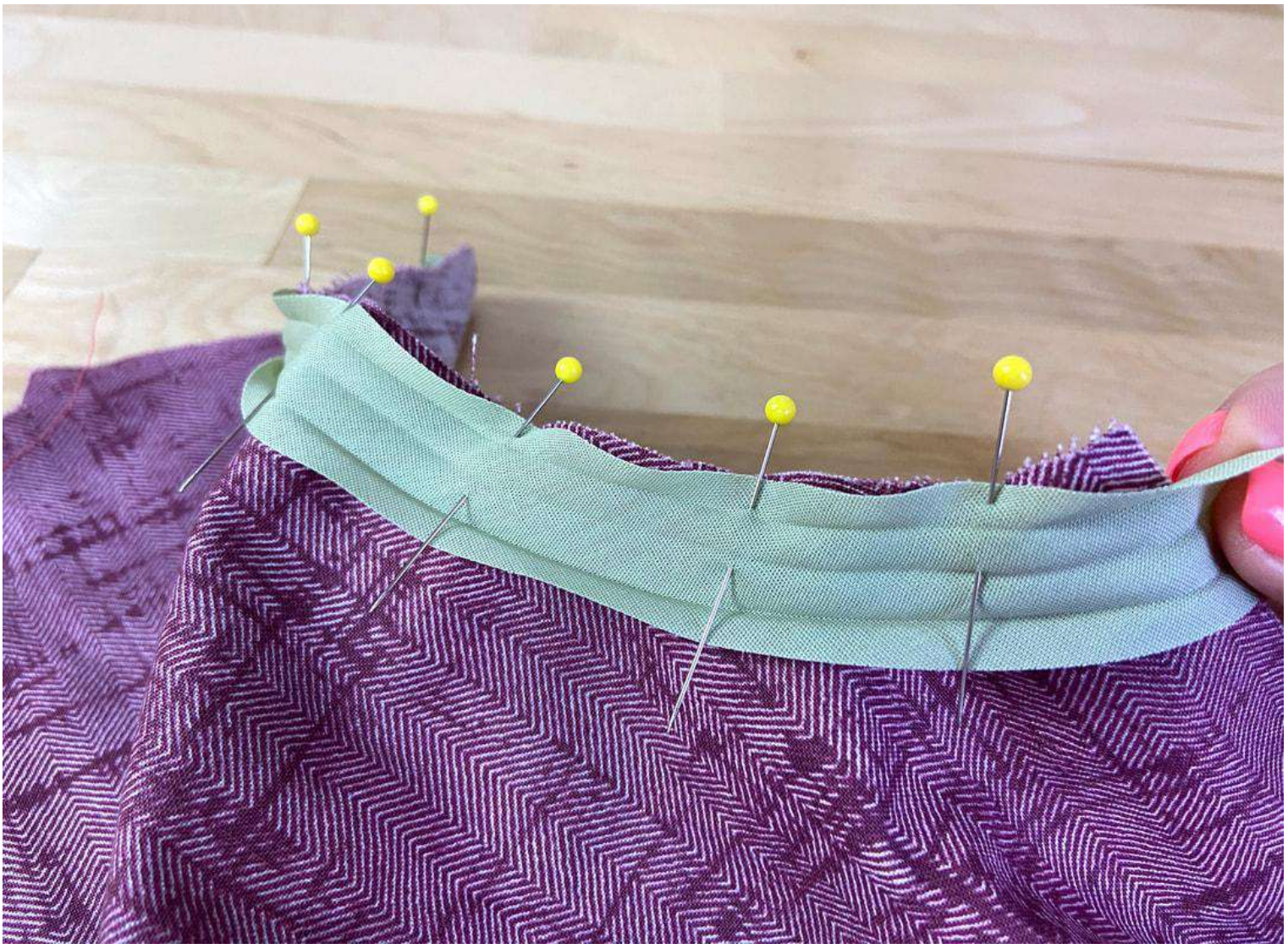
3.4 Binding

Definition

Binding is a narrow strip of fabric used to cover and finish raw edges of garments and household articles, preventing fraying and giving a neat appearance.

It may be cut on the straight grain or bias, depending on the shape and purpose.







Types of binding

1. **Straight-grain binding**

Cut parallel or perpendicular to the fabric grain.

It is suitable for straight edges.

It is commonly used on straight seams and hems.

2. **Bias binding**

Cut diagonally across the fabric at approximately 45 degrees to the selvedge.

It stretches more easily than straight-grain strips.

It is suitable for curved edges such as necklines and armholes.

3. **Single-fold binding**

The raw edges are folded towards the centre once or prepared as a single-fold strip.

It is useful for finishing garment edges.

4. **Double-fold binding**

The strip is folded to enclose the raw edge.

It provides a neat finish on both sides.

It is suitable for necklines, armholes and household articles.

Uses of binding

Finishing necklines.

Finishing armholes.

Covering raw edges.

Finishing blanket edges.

Decorating table mats.

Finishing cushion covers.

Strengthening edges of household textiles.

Advantages

Prevents fabric fraying.

Gives garments a neat finish.

Reinforces edges.

Can be decorative.

Suitable for straight and curved edges when correctly selected.

Limitations

Requires accurate measuring and stitching.

Poorly attached binding may twist or pucker.

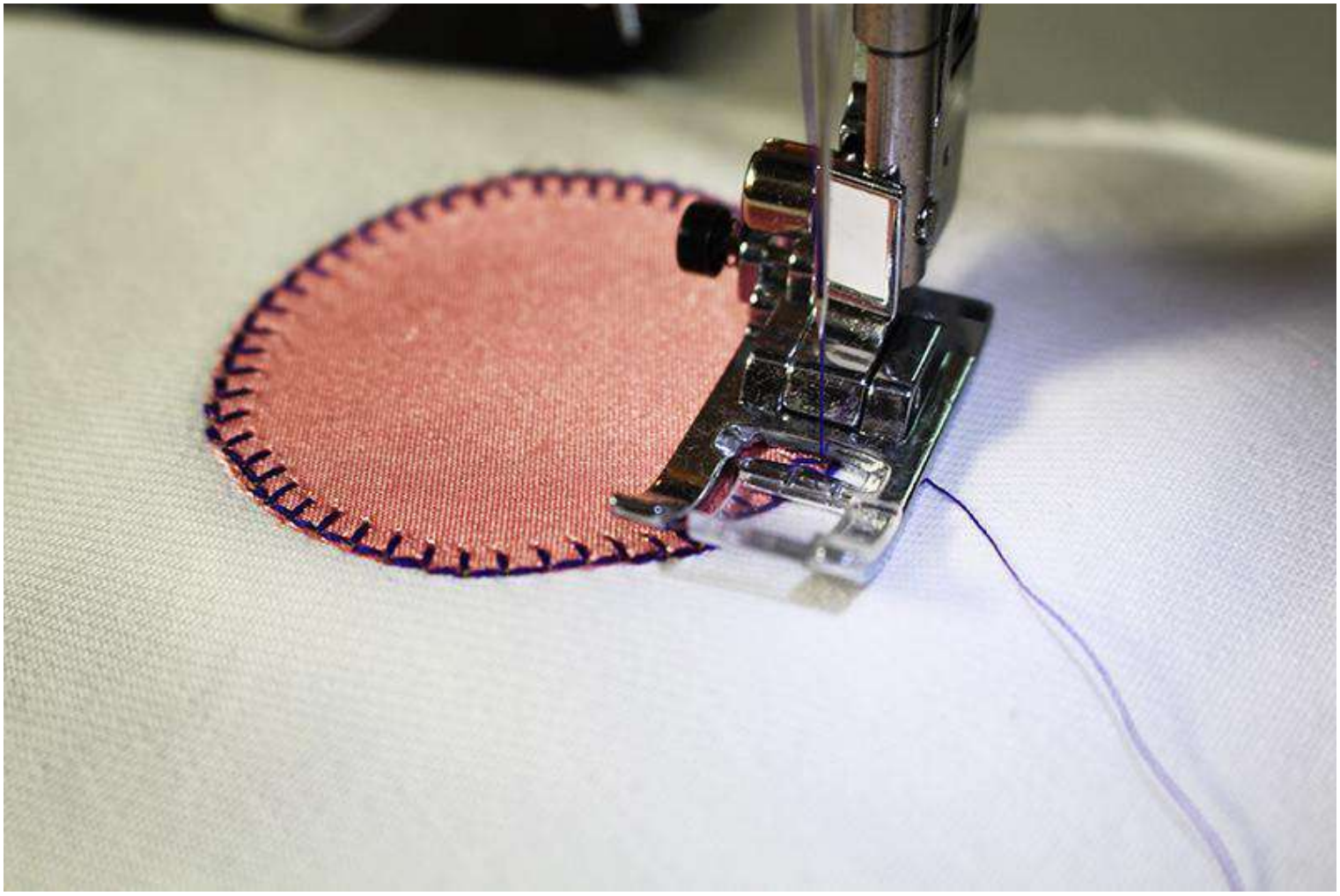
Incorrectly selected binding may distort delicate fabric.

3.5 Appliqué

Definition

Appliqué is a decorative technique in which pieces of fabric are cut into shapes and attached to another fabric surface by stitching, fusing or other suitable methods to create patterns, pictures or designs.







Types of appliqué

1. **Hand-sewn appliqué**

Fabric shapes are attached using hand stitches.

It allows careful control of decorative details.

It is suitable for small designs and delicate work.

2. **Machine-sewn appliqué**

Fabric shapes are attached using a sewing machine.

Decorative stitches such as zigzag or satin stitches may be used.

It is suitable for repeated designs and larger projects.

3. **Raw-edge appliqué**

The edges of the decorative fabric remain exposed.

They may fray slightly depending on the fabric.

It creates a casual decorative appearance.

4. **Turned-edge appliqué**

The raw edges are folded underneath before stitching.

It creates a neat and smooth finish.

It requires careful preparation.

5. **Fused appliqué**

A suitable fusible material is used to hold the decorative shape in place.

It may be further secured using stitching.

It is useful for attaching decorative motifs.

Uses of appliqué

Decorating children's clothes.

Making decorative patterns on dresses and shirts.

Decorating school bags.

Embellishing cushion covers.

Decorating bed linen.

Making wall hangings.

Repairing or covering small fabric defects.

Advantages

Improves garment appearance.

Allows creative expression.

Makes simple garments more attractive.

Can use fabric offcuts and recycled textiles.

Can help cover minor fabric defects.

Limitations

It may be time-consuming.

Poor stitching may cause edges to lift.

Excessive appliqué may make a garment stiff.

Some fabrics may require special stabilisation.

4.0 FACTORS TO CONSIDER WHEN CHOOSING TRIMMINGS

The choice of trimmings is important in clothing construction because trimmings influence the appearance, comfort, quality and durability of finished garments.

The following factors should be considered when selecting trimmings.

4.1 Type and purpose of the garment

Trimmings should be suitable for the garment being constructed.

Lace may be appropriate for dresses, blouses and special-occasion garments.

Binding is suitable for finishing raw edges.

Appliqué may be used to decorate children's clothes and school bags.

Ribbons may be used on dresses, aprons and household articles.

4.2 Type and weight of fabric

Heavy fabrics require strong and suitable trimmings.

Lightweight fabrics require light trimmings to avoid distortion.

Delicate fabrics should be decorated using soft materials.

Heavy lace may not be suitable for lightweight chiffon.

4.3 Colour coordination

Trimmings should match or complement the garment colour.

Contrasting colours can be used to create attractive designs.

Colour combinations should be harmonious.

For example, white lace can be used on a blue dress to create a beautiful contrast.

4.4 Design and style of the garment

Trimmings should complement the garment design.

Excessive decoration may make a garment unattractive.

Simple garments may require minimal decoration.

Formal garments may require elegant and subtle trimmings.

4.5 Intended wearer

The age and preferences of the wearer should be considered.

Children's garments may use colourful ribbons and appliqué.

Adults may prefer simple and elegant decorations.

Trimmings should not irritate the wearer's skin.

4.6 Cost and availability

The cost of trimmings should be within the clothing construction budget.

Locally available materials may reduce production expenses.

The price should be considered in relation to the quality of the finished garment.

4.7 Durability

Trimmings should withstand normal use.

They should not tear, fade or become detached easily.

They should retain their appearance after laundering.

4.8 Ease of attachment

Select trimmings that can be attached using available equipment and skills.

Some trimmings require special sewing techniques.

The construction method should not damage the fabric.

4.9 Ease of maintenance

Trimmings should be compatible with the garment's washing and ironing requirements.

They should not shrink, melt, bleed colour or become distorted during cleaning.

Different materials may require different care methods.

4.10 Fashion trends

Trimmings should suit the intended fashion style.

Modern designs may incorporate decorative appliqué, ribbons and lace.

However, fashion should not compromise comfort and functionality.

4.11 Position of attachment

The position where the trimming will be attached should be considered.

Binding is suitable for raw edges.

Lace may be attached to hems, sleeves and necklines.

Appliqué may be placed on garment fronts, pockets and sleeves.

4.12 Safety

Trimmings should not have sharp or dangerous edges.

Small decorative items should be securely attached to children's garments.

Long ribbons and cords should be avoided where they may cause entanglement.

5.0 PROCEDURES FOR ATTACHING TRIMMINGS

Attaching trimmings requires proper preparation, accurate positioning and suitable stitching techniques.

The method used depends on the type of trimming, fabric and design of the garment.

5.1 General preparation before attaching trimmings

Select the appropriate trimming.

Examine the garment and identify the area to be decorated or finished.

Gather the required sewing tools and materials.

Wash or pre-shrink the trimming where necessary, especially if it is likely to shrink.

Measure the required length.

Cut the trimming accurately.

Finish the raw edges where necessary.

Mark the attachment position using tailor's chalk.

Pin or tack the trimming in position.

Check that the trimming is evenly distributed.

Attach using an appropriate sewing technique.

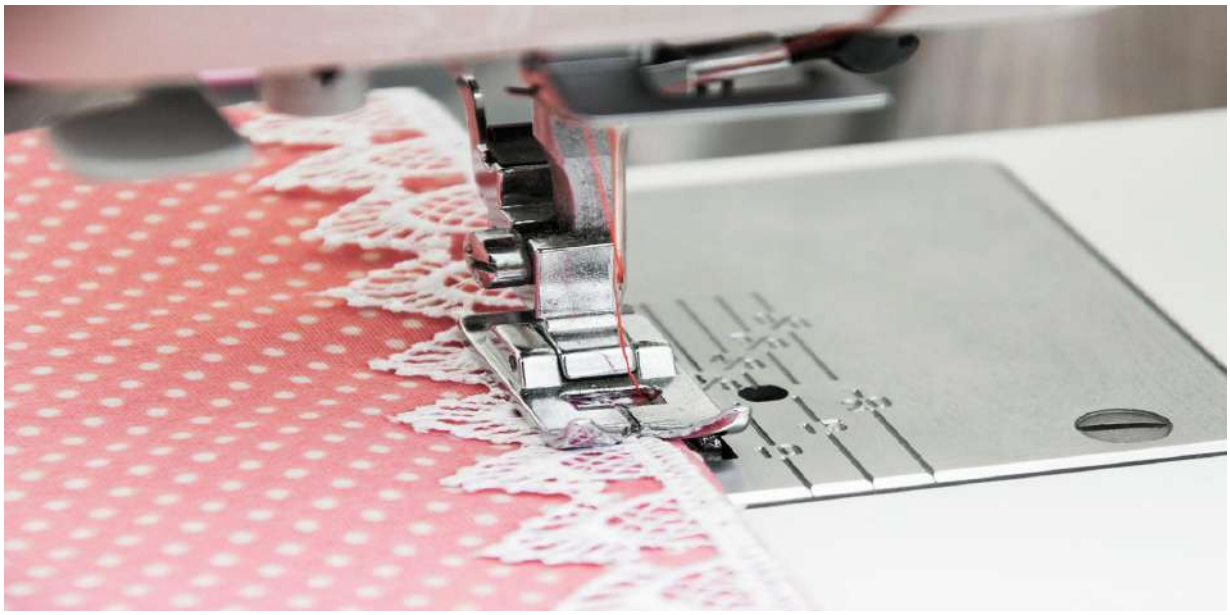
Remove temporary stitches.

Trim loose threads.

Press carefully according to the fabric and trimming requirements.

Inspect the finished work.

5.2 Procedure for attaching lace



Tools and materials

Lace.

Garment or fabric sample.

Needle.

Matching sewing thread.

Sewing machine.

Scissors.

Pins.

Tape measure.

Tailor's chalk.

Iron.

Procedure

Select lace that matches or complements the garment.

Measure the edge or section to be decorated.

Cut the lace to the required length.

Finish the fabric edge if necessary.

Position the lace along the intended area.

Pin or tack it evenly in place.

Ensure the lace is not stretched or twisted.

Select a suitable stitch on the sewing machine.

Stitch along the appropriate edge of the lace.

Secure the beginning and end of the stitching.

Remove pins and tacking stitches.

Trim excess threads.

Press gently using a suitable temperature.

Inspect the attachment for neatness.

Points to observe

Use a fine needle for delicate lace.

Avoid pulling the lace while stitching.

Use matching thread.

Avoid excessive heat when pressing synthetic lace.

Ensure the stitching does not spoil the lace pattern.

5.3 Procedure for attaching ribbons



Procedure

Select a ribbon of suitable width, colour and texture.

Measure the required length.

Cut the ribbon accurately.

Finish the ends to prevent fraying, where necessary.

Mark the intended position on the garment.

Pin or tack the ribbon in position.

Ensure the ribbon lies flat.

Stitch along one or both edges, depending on the design.

Secure the ends with neat stitches.

Remove temporary stitches.

Trim loose threads.

Press carefully if the ribbon material allows.

Examine the finished work.

Important points

Avoid stretching the ribbon during stitching.

Use suitable thread and needle sizes.

Avoid direct high heat on synthetic ribbons.

Ensure the ribbon is evenly attached.

5.4 Procedure for attaching binding



Tools and materials

Binding strip.

Fabric or garment.

Needle and thread.

Sewing machine.

Pins.

Scissors.

Tape measure.

Iron.

Tailor's chalk.

Procedure

Select binding that matches the fabric and the intended design.

Measure the edge to be finished.

Cut the binding to the required length.

Prepare the binding by folding or pressing as required.

Position the binding along the raw edge of the fabric.

Align the raw edges appropriately.

Pin or tack the binding in place.

Stitch along the first fold.

Fold the binding over the raw edge.

Turn the folded edge to the opposite side of the fabric.

Secure it with stitching.

Remove pins and temporary stitches.

Trim loose threads.

Press the finished edge carefully.

Inspect the binding to ensure the raw edge is completely enclosed.

Points to observe

Use bias binding for curved edges.

Avoid stretching the binding excessively.

Ensure corners are neatly finished.

Maintain even stitching.

Avoid puckering.

5.5 Procedure for attaching appliqué



Tools and materials

Decorative fabric.

Base fabric or garment.

Paper for making a pattern.

Pencil.

Scissors.

Needle and thread.

Sewing machine.

Pins.

Suitable interfacing or fusible web, where required.

Iron.

Procedure

Select a suitable appliqué design.

Draw the design on paper.

Cut out the paper pattern.

Place the pattern on the decorative fabric.

Trace the design onto the fabric.

Cut out the fabric shape accurately.

Prepare the base fabric by pressing it.

Position the decorative shape on the base fabric.

Pin or temporarily secure the shape.

Attach using hand stitches or machine stitching.

Use suitable edge-finishing stitches, such as zigzag or satin stitch.

Ensure the edges are securely attached.

Remove temporary stitches.

Trim loose threads.

Press carefully.

Inspect the design for neatness and durability.

Important points

Choose colours that complement each other.

Use suitable stabilisation for lightweight fabrics.

Ensure the design is properly positioned.

Avoid excessively dense stitching that makes the garment stiff.

Secure all edges to prevent lifting and fraying.

6.0 IMPORTANCE OF FASTENINGS AND TRIMMINGS IN CLOTHING CONSTRUCTION

Fastenings and trimmings contribute significantly to the quality, functionality and appearance of garments.

6.1 Importance of fastenings

1. **Opening and closing garments**

Fastenings enable garments to be opened and closed.

For example, zips allow skirts and trousers to be worn and removed easily.

2. **Securing garments**

They keep garment openings closed during wear.

Buttons and hooks help prevent garments from opening unintentionally.

3. **Improving convenience**

Fastenings make dressing and undressing easier.

Velcro is especially convenient for young children.

4. **Adjusting garment fit**

Some fastenings allow garments to be tightened or loosened.

Drawstrings are commonly used to adjust waistbands.

5. **Improving appearance**

Decorative buttons and attractive zips enhance garment appearance.

Well-selected fastenings complement the garment design.

6. **Improving comfort**

Appropriate fastenings help garments fit comfortably.

They prevent unnecessary gaps and exposure.

7. **Supporting garment design**

Fastenings make different garment styles possible.

For example, separating zips allow jackets to open fully.

8. **Increasing durability**

Properly selected and attached fastenings withstand repeated use.

Strong fastenings help garments remain functional for longer.

9. **Promoting independence**

Easy-to-use fastenings enable children, elderly people and people with limited hand movement to dress themselves.

10. **Securing household articles**

Fastenings are used on cushion covers, bags, purses and other household textiles.

6.2 Importance of trimmings

1. **Improving beauty and appearance**

Trimmings make garments more attractive.

Lace and ribbons create decorative effects.

2. **Enhancing creativity**

They allow designers to express creativity through colours, textures and patterns.

Appliqué can be used to produce unique designs.

3. **Finishing raw edges**

Binding covers raw fabric edges.

It prevents fraying and gives a neat appearance.

4. **Strengthening fabric edges**

Suitable binding reinforces areas that may experience wear.

It helps protect edges from damage.

5. **Improving garment value**

Attractive and well-attached trimmings may increase the perceived value of a garment.

6. **Creating individuality**

Trimmings help distinguish one garment from another.

Personalised appliqué can make clothing unique.

7. **Concealing minor defects**

Appliqué may cover small fabric stains or imperfections when appropriately used.

Decorative trims may also hide certain construction details.

8. **Improving finishing**

Trimmings create professional finishes on garments.

Lace and binding can improve the appearance of hems, necklines and sleeves.

9. **Supporting garment themes**

Trimmings may be selected to suit cultural, seasonal or ceremonial designs.

For example, African print appliqué can be used to create distinctive garments.

10. **Decorating household articles**

Lace, ribbon, binding and appliqué improve the appearance of curtains, tablecloths, cushions and bed linen.

7.0 DIFFERENCES BETWEEN FASTENINGS AND TRIMMINGS

Fastenings	**Trimmings**
Mainly used to secure garment openings.	Mainly used for decoration and finishing.
They make garments easy to open and close.	They enhance the appearance and finish of garments.
They are commonly positioned at openings.	They may be attached to hems, necklines, sleeves and other areas.
They improve the functionality of garments.	They improve appearance and may reinforce fabric edges.
Examples include buttons, zips and Velcro.	Examples include lace, ribbons, binding and appliqué.

Note: Some notions have more than one function. For example, ribbon may serve as a tie fastening or a decorative trimming.

8.0 QUALITY OF WELL-ATTACHED FASTENINGS AND TRIMMINGS

A well-constructed garment should have fastenings and trimmings that are securely and neatly attached.

8.1 Qualities of well-attached fastenings

They are firmly secured to the fabric.

They are correctly positioned.

They match the garment design.

They are easy to operate.

They do not distort the fabric.

They are suitable for the weight of the fabric.

They have neat and even stitches.

They do not irritate the wearer's skin.

They withstand normal use and laundering.

They provide the intended fastening function.

8.2 Qualities of well-attached trimmings

They are neatly and evenly positioned.

They complement the garment colour.

They are securely attached.

They do not wrinkle or pucker the fabric.

Their edges are properly finished.

They do not distort the garment.

They are appropriate for the garment's purpose.

They are comfortable to wear.

They withstand normal cleaning.

They improve the appearance of the finished article.

8.3 Common defects in attaching fastenings and trimmings

Defect	Possible cause	Remedy
Loose buttons	Insufficient stitches	Reattach using strong stitches.
Misaligned buttons	Inaccurate marking	Measure and reposition.
Jammed zip	Damaged teeth or trapped threads	Remove obstruction or replace damaged zip.
Puckered zip opening	Uneven stitching or fabric stretching	Unpick and restitch correctly.
Loose lace	Weak or inadequate stitching	Reinforce attachment.
Twisted ribbon	Incorrect positioning	Unpick and reposition.

Uneven binding	Inaccurate folding and stitching	Repress and restitch.
Lifting appliqué edges	Inadequate edge stitching	Secure edges with suitable stitches.
Frayed trimming	Raw edges left unfinished	Use an appropriate edge finish.

9.0 CARE AND MAINTENANCE OF FASTENINGS AND TRIMMINGS

Proper care helps maintain the appearance and functionality of sewing notions.

9.1 Care of fastenings

Close zips before washing where appropriate.

Remove loose threads caught in zip teeth.

Avoid pulling zips forcefully.

Replace broken buttons promptly.

Repair loose hooks and eyes.

Keep metal fastenings clean and dry to prevent rust.

Avoid exposing plastic fastenings to excessive heat.

Avoid overstretching Velcro.

Remove lint and dirt from hook-and-loop fasteners.

Follow garment care instructions when ironing.

9.2 Care of trimmings

Follow the recommended washing instructions.

Use gentle washing methods for delicate lace.

Avoid excessive heat on synthetic ribbons.

Store unused ribbons and lace in clean, dry conditions.

Repair loose appliqué edges.

Avoid harsh chemicals that may discolour trimmings.

Press using suitable temperatures.

Store garments properly to avoid crushing decorative trims.

10.0 SAFETY AND ENVIRONMENTAL CONSERVATION DURING SEWING

Safety and proper disposal of waste are essential during clothing construction.

10.1 Safety precautions when using sewing tools and equipment

Keep needles and pins in a suitable pin cushion.

Never leave sharp needles on the sewing table.

Handle scissors carefully.

Pass scissors with the handles facing the receiver.

Switch off the sewing machine when not in use.

Keep fingers away from the sewing machine needle.

Avoid wearing loose clothing when operating a sewing machine.

Maintain proper sitting posture.

Ensure the sewing area has adequate lighting.

Keep the working area clean and organised.

Avoid playing or running around sewing equipment.

Use electrical equipment with dry hands.

Report damaged electrical cords and equipment.

Use irons carefully to prevent burns.

Allow hot irons to cool before storing them.

10.2 Safe handling of sewing materials

Store needles, pins, hooks and other sharp items safely.

Keep small fastenings away from very young children.

Handle metal fastenings carefully to avoid cuts.

Follow manufacturer instructions when using adhesives and fusible materials.

Use the correct needle for the fabric.

Avoid placing pins in the mouth.

10.3 Environmental conservation during clothing construction

Fabric, thread and trimming waste should be managed responsibly.

Methods of managing sewing waste

1. **Reuse of fabric offcuts**

Small pieces of fabric can be used to make appliqué.

They can be used to make patchwork articles.

2. **Recycling**

Suitable textile waste can be sent for recycling.

Some materials can be converted into new textile products.

3. **Making useful household articles**

Fabric scraps can be used to make dusters, potholders and small bags.

4. **Proper disposal of thread clippings**

Collect loose threads in a waste container.

Do not leave thread clippings scattered on the floor.

5. **Proper disposal of sharp waste**

Broken needles and pins should be placed in a puncture-resistant container.

They should never be mixed carelessly with ordinary waste.

6. **Reducing waste during cutting**

Arrange patterns carefully to minimise fabric wastage.

Measure accurately before cutting.

7. **Reusing ribbons and lace**

Recover usable trimmings from old garments where appropriate.

Use them in new clothing projects.

8. **Avoiding environmental pollution**

Do not burn synthetic textile waste.

Dispose of unusable waste according to local waste-management guidelines.

10.4 Importance of proper waste disposal

Prevents accidents and injuries.

Keeps the sewing environment clean.

Reduces environmental pollution.

Promotes recycling and reuse.

Conserves resources.

Encourages responsible consumption.

Improves hygiene in the work area.

11.0 PRACTICAL LEARNING ACTIVITIES

Practical activities enable learners to develop skills in selecting, preparing and attaching fastenings and trimmings.

Activity 1: Identification of sewing notions

Task: Collect different sewing notions available in the local market or at home.

Materials

Buttons.

Zips.

Hooks and eyes.

Hooks and bars.

Press studs.

Velcro.

Tie strings.

Lace.

Ribbons.

Binding.

Appliqué samples.

Procedure

Arrange the collected sewing notions on a table.

Observe their physical characteristics.

Identify each item by name.

Classify the items into fastenings and trimmings.

Describe their uses.

Discuss the factors to consider when selecting them.

Display the samples in a labelled folder.

Activity 2: Attaching fastenings

Task: Prepare samples demonstrating different methods of attaching fastenings.

Procedure

Prepare small fabric samples.

Attach different types of buttons.

Make a buttonhole on a fabric sample.

Attach hooks and eyes.

Attach a press stud.

Insert a zip into a fabric opening.

Attach Velcro to a fabric sample.

Prepare a sample with tie strings.

Mount the samples in a folder.

Label each sample and indicate its use.

Activity 3: Attaching trimmings

Task: Decorate a fabric sample or simple garment using different trimmings.

Procedure

Select a suitable fabric.

Collect lace, ribbon, binding and appliqué materials.

Design a simple decorative pattern.

Attach lace to one section.

Attach ribbon to another section.

Finish an edge using binding.

Attach an appliqué design.

Inspect the quality of the finished work.

Display the finished samples.

Receive feedback from classmates.

Activity 4: Peer assessment

Learners should assess one another's work using the following criteria.

Assessment criterion	What to look for
Selection	Appropriate notions selected
Accuracy	Correct positioning
Stitching	Neat and even stitches
Security	Firm attachment
Appearance	Attractive finish
Functionality	Fastenings work correctly
Safety	Safe use of tools
Waste management	Proper disposal of clippings

Activity 5: Application in a Kenyan home setting

Situation:

A learner is helping a family member repair a school uniform, a child's dress, a school bag and a cushion cover.

Tasks:

Identify suitable fastenings for each article.

Select appropriate trimmings for the child's dress.

Explain why a strong zip may be suitable for the school bag.

Describe how binding can improve the finish of a cushion cover.

Demonstrate how to attach a loose button.

Explain how to dispose of the sewing waste safely.

12.0 SUMMARY OF THE SUB-STRAND

Area	Main points
Sewing notions	Materials and accessories used in sewing and clothing construction.
Fastenings	Used to secure and close openings.
Buttons	Used with buttonholes or loops.
Zips	Consist of interlocking teeth and a slider.
Hooks and eyes	Used for discreet fastening.
Hooks and bars	Used for firm fastening.
Tie strings	Used to tie and adjust garments.
Press studs	Snap together when pressed.
Velcro	Uses hooks and loops.
Trimmings	Used for decoration, finishing and reinforcement.
Lace	Decorative openwork material.
Ribbons	Narrow decorative or functional fabric strips.
Binding	Covers and finishes raw fabric edges.

Appliqué	Decorative fabric shapes attached to another fabric.
Selection	Depends on fabric, garment, wearer, cost, comfort and durability.
Attachment	Requires preparation, accurate positioning and suitable stitching.
Safety	Involves careful handling of needles, pins, scissors, machines and irons.
Waste management	Involves reuse, recycling and safe disposal of waste.

REVISION QUESTIONS

SECTION A: MULTIPLE-CHOICE QUESTIONS

30 QUESTIONS – 30 MARKS

Instructions: Answer all questions. Choose the correct answer from the alternatives A, B, C and D.

1. A learner is making a school uniform shirt and needs an item that can be passed through a specially prepared slit to close the front opening. Which sewing notion should the learner select?

A. Lace

B. Button

C. Binding

D. Appliqué

2. Which statement best describes sewing notions?

A. Materials used only for decorating garments.

B. Materials used only for joining fabric pieces permanently.

C. Accessories used to fasten, finish, decorate and construct garments.

D. Tools used exclusively for measuring fabric.

3. A tailor wants to attach a fastening to a lightweight blouse without creating a bulky finish. Which option is most appropriate?

A. Large metal hook and bar.

B. Heavy-duty metal zip.

C. Small sew-on hook and eye.

D. Large industrial snap fastener.

4. Which part of a zip moves along the teeth to open and close the fastening?

A. Tape.

B. Slider.

C. Bottom stop.

D. Top stop.

5. A learner is constructing a formal dress and wants a fastening that is almost invisible when the garment is closed. Which type of zip is most suitable?

A. Metal zip.

B. Separating zip.

C. Invisible zip.

D. Plastic moulded zip.

6. Which button is most appropriate for a thick winter coat because it provides space between the button and the fabric?

A. Flat button.

B. Shank button.

C. Covered button.

D. Decorative flat button.

7. A fastening consists of a curved metal component and a corresponding loop. Identify the fastening.

A. Hook and eye.

B. Press stud.

C. Velcro.

D. Tie string.

8. Which fastening consists of two parts that snap together when pressed?

A. Button and buttonhole.

B. Hook and bar.

C. Press stud.

D. Tie string.

9. A child has difficulty fastening ordinary buttons. Which fastening would be most convenient for the child's school shoes?

A. Hook and bar.

B. Velcro.

C. Metal zip.

D. Small hook and eye.

10. Which fastening consists of two strips, one containing tiny hooks and the other containing soft loops?

A. Press stud.

B. Buttonhole.

C. Velcro.

D. Invisible zip.

11. A dressmaker wants to adjust the waist of a pair of trousers using a fastening passed through a casing. Which option should be selected?

A. Drawstring.

B. Lace.

C. Appliqué.

D. Binding.

12. Which factor is most important when choosing a fastening for a heavy denim jacket?

A. Its ability to match the curtain design.

B. Its strength and durability.

C. Its decorative appearance only.

D. Its ability to stretch easily.

13. A tailor chooses a large heavy metal button for a very lightweight chiffon blouse. What is the most likely problem?

A. The button will become invisible.

B. The fabric may sag or become distorted.

C. The button will automatically form a buttonhole.

D. The garment will become waterproof.

14. Which statement describes a buttonhole?

A. A strip of fabric used for decoration.

B. A slit in fabric finished to allow a button to pass through.

C. A metal component used to attach a zip.

D. A decorative strip attached to a hem.

15. Which sewing notion is mainly used to cover and finish raw fabric edges?

A. Binding.

B. Press stud.

C. Hook and eye.

D. Button.

16. A learner is finishing the curved neckline of a dress. Which type of binding is most appropriate?

A. Heavy straight-grain binding.

B. Bias binding.

C. Metal binding.

D. Rigid plastic binding.

17. Which trimming is made by interlacing, twisting or looping threads to form openwork patterns?

A. Ribbon.

B. Lace.

C. Button.

D. Velcro.

18. A learner wants to create a shiny decorative bow on a special-occasion dress. Which ribbon is most suitable?

A. Satin ribbon.

B. Grosgrain ribbon.

C. Cotton tape.

D. Bias binding.

19. Which characteristic distinguishes grosgrain ribbon?

A. It has a ribbed texture.

B. It contains metal teeth.

C. It has interlocking hooks.

D. It consists of two fastening components.

20. A designer cuts flower shapes from colourful fabric and stitches them onto a plain dress. Which decorative technique is being used?

A. Binding.

B. Appliqué.

C. Hemming.

D. Gathering.

21. Which type of appliqué involves folding the raw edges of the decorative fabric underneath before attaching it?

A. Raw-edge appliqué.

B. Turned-edge appliqué.

C. Drawstring appliqué.

D. Binding appliqué.

22. Which factor should be considered when selecting lace for a lightweight cotton blouse?

A. The lace should be heavier than the blouse.

B. The lace should be suitable in weight and texture.

C. The lace should always be metallic.

D. The lace should be rough.

23. A learner attaches a zip but the fabric puckers along the opening. What is the most likely cause?

A. The zip is correctly aligned.

B. The fabric was stretched or stitched unevenly.

C. The zip was selected in the correct length.

D. The opening was accurately prepared.

24. Which action helps prevent lace from becoming twisted during attachment?

A. Pulling the lace forcefully.

B. Positioning and pinning the lace evenly before stitching.

C. Cutting the lace shorter than required.

D. Using very loose stitches throughout.

25. What is the main function of trimmings in clothing construction?

A. To replace all garment seams.

B. To decorate, finish and sometimes reinforce garments.

C. To measure fabric.

D. To cut garment patterns.

26. A learner is attaching a press stud to a delicate fabric. Which precaution is most important?

A. Use excessive force when attaching it.

B. Select an appropriate size and attachment method.

C. Place it without measuring.

D. Use a large hammer without protection.

27. Which of the following is a quality of a well-attached fastening?

A. It is loosely attached.

B. It distorts the garment.

C. It is correctly positioned and functions properly.

D. It has uneven stitches.

28. Why should fabric offcuts be collected after a sewing activity?

A. To increase the amount of waste.

B. To prevent learners from using scissors.

C. To allow reuse and maintain a clean working environment.

D. To mix them with food waste.

29. A learner finds a broken sewing needle after a practical lesson. What should the learner do?

A. Leave it on the floor.

B. Throw it carelessly into an open waste bin.

C. Place it in a puncture-resistant container.

D. Put it in a pocket.

30. A family wants to improve the appearance of a plain cushion cover while ensuring that its raw edges do not fray. Which combination is most appropriate?

A. Binding for the edges and appliqué for decoration.

B. Buttons for the edges and Velcro for decoration.

C. Hooks and eyes for the edges and press studs for decoration.

D. Zips for the edges and drawstrings for decoration.

SECTION B: STRUCTURED QUESTIONS

50 MARKS

Instructions: Answer all questions. Write your answers clearly and give relevant examples where necessary.

QUESTION 1: SEWING NOTIONS (8 MARKS)

A learner is preparing to construct a school uniform and has collected different sewing materials and accessories.

a) Define the term sewing notions. (2 marks)

b) Identify the two main categories of sewing notions. (2 marks)

c) Give two examples of sewing notions under each category identified in (b). (4 marks)

QUESTION 2: FASTENINGS (8 MARKS)

A dressmaker is making different garments for clients with varying needs.

a) Explain the functions of fastenings in clothing construction. (4 marks)

b) State four factors to consider when selecting fastenings for garments. (4 marks)

QUESTION 3: TYPES AND ATTACHMENT OF FASTENINGS (10 MARKS)

A learner is required to prepare a sample folder demonstrating different fastenings.

a) Differentiate between the following pairs:

i) Buttons and buttonholes. (2 marks)

ii) Hooks and eyes and hooks and bars. (2 marks)

b) State three advantages of using Velcro on children's clothing. (3 marks)

c) Outline three steps followed when attaching a button to a garment. (3 marks)

QUESTION 4: TRIMMINGS (8 MARKS)

A clothing designer intends to decorate a plain cotton dress using lace, ribbon, binding and appliqué.

a) Define the term trimmings. (2 marks)

b) State four examples of trimmings used in clothing construction. (2 marks)

c) Explain four functions of trimmings in garment construction. (4 marks)

QUESTION 5: ATTACHMENT OF TRIMMINGS (8 MARKS)

During a practical lesson, learners are required to decorate fabric samples using different trimmings.

a) Outline four steps followed when attaching lace to a garment. (4 marks)

b) Explain four precautions to observe when attaching trimmings to garments. (4 marks)

QUESTION 6: SAFETY, QUALITY AND ENVIRONMENTAL CONSERVATION (8 MARKS)

A Home Science teacher observes that learners leave fabric offcuts, thread clippings, broken needles and pins scattered around the sewing room after practical lessons.

a) State three safety precautions to observe when working with sewing equipment. (3 marks)

b) Explain three ways of managing fabric and thread waste after sewing activities. (3 marks)

c) State two qualities of well-attached fastenings and trimmings. (2 marks)

ANSWER KEY AND SUGGESTED MARKING SCHEME

Section A: Multiple-choice answers

30 MARKS – 1 MARK EACH

Question	Answer	Question	Answer
1	B	16	B
2	C	17	B
3	C	18	A
4	B	19	A
5	C	20	B
6	B	21	B
7	A	22	B
8	C	23	B
9	B	24	B
10	C	25	B
11	A	26	B
12	B	27	C
13	B	28	C
14	B	29	C
15	A	30	A

Section B: Suggested marking scheme

QUESTION 1 (8 MARKS)

a) Sewing notions are small materials, accessories and decorative items used during sewing and clothing construction to fasten, finish, strengthen, repair or decorate garments and household articles. (2 marks)

b)

Fastenings. (1 mark)

Trimmings. (1 mark)

c) Examples:

Fastenings:

Buttons.

Zips.

Hooks and eyes.

Press studs.

Velcro.

Tie strings.

Trimmings:

Lace.

Ribbons.

Binding.

Appliqué.

Award 1 mark for each correct example, maximum 4 marks.

QUESTION 2 (8 MARKS)

a) Functions of fastenings:

They open and close garment openings.

They secure garments during wear.

They make dressing and undressing easier.

They help adjust garment fit.

They improve garment appearance.

They provide convenience to the wearer.

They secure household articles such as bags and cushion covers.

Award 1 mark for each correct function, maximum 4 marks.

b) Factors to consider:

Type and purpose of garment.

Type and weight of fabric.

Colour of fabric.

Size and weight of fastening.

Intended wearer.

Durability and strength.

Comfort and safety.

Cost and availability.

Ease of attachment.

Ease of maintenance.

Award 1 mark for each correct factor, maximum 4 marks.

QUESTION 3 (10 MARKS)

a)

i) Buttons and buttonholes:

A button is a small fastening accessory attached to one side of a garment. (1 mark)

A buttonhole is a specially finished slit through which a button passes. (1 mark)

ii) Hooks and eyes and hooks and bars:

Hooks and eyes consist of a hook and a corresponding loop or eye. (1 mark)

Hooks and bars consist of a hook and a specially shaped metal bar. (1 mark)

b) Advantages of Velcro:

It is easy to fasten and unfasten.

It is suitable for young children.

It allows quick adjustment.

It is available in different colours and sizes.

It is convenient for people with limited hand dexterity.

Award 1 mark for each, maximum 3 marks.

c) Steps for attaching a button:

Select a suitable button and prepare a threaded needle.

Mark and position the button correctly.

Pass the needle through the buttonholes repeatedly.

Secure the stitches on the wrong side.

Trim loose threads and test the fastening.

Award 1 mark for each correct step, maximum 3 marks.

QUESTION 4 (8 MARKS)

a) Trimmings are decorative or functional materials attached to garments and household articles to improve appearance, finish raw edges or reinforce fabric sections. (2 marks)

b) Examples:

Lace.

Ribbon.

Binding.

Appliqué.

Award ½ mark each, maximum 2 marks.

c) Functions:

Improve the appearance of garments.

Decorate clothing and household articles.

Finish raw fabric edges.

Prevent fabric fraying.

Reinforce garment edges.

Conceal minor fabric defects.

Create unique garment designs.

Improve the perceived value of garments.

Award 1 mark each, maximum 4 marks.

QUESTION 5 (8 MARKS)

a) Steps for attaching lace:

Select suitable lace.

Measure the area to be decorated.

Cut lace to the required length.

Finish the fabric edge where necessary.

Position and pin the lace.

Stitch along the appropriate edge.

Secure the stitching.

Remove temporary stitches and trim loose threads.

Award 1 mark each, maximum 4 marks.

b) Precautions:

Use the correct needle and thread.

Avoid stretching the trimming.

Position the trimming accurately.

Use suitable stitching techniques.

Avoid excessive heat when pressing synthetic materials.

Ensure the trimming is securely attached.

Avoid puckering the fabric.

Observe safety when using sewing equipment.

Award 1 mark each, maximum 4 marks.

QUESTION 6 (8 MARKS)

a) Safety precautions:

Keep needles and pins in a pin cushion.

Handle scissors carefully.

Switch off the sewing machine when not in use.

Keep fingers away from the machine needle.

Use irons carefully.

Maintain a clean working area.

Avoid operating electrical equipment with wet hands.

Award 1 mark each, maximum 3 marks.

b) Waste management:

Reuse fabric offcuts to make appliqué or patchwork.

Recycle suitable textile waste.

Collect thread clippings in a waste container.

Place broken needles in a puncture-resistant container.

Use fabric scraps to make household articles.

Dispose of unusable waste appropriately.

Award 1 mark each, maximum 3 marks.

c) Qualities:

Firmly and securely attached.

Correctly positioned.

Neat and even stitching.

Attractive appearance.

Functional and durable.

No fabric puckering or distortion.

Award 1 mark each, maximum 2 marks.

GRADE 11 HOME SCIENCE

STRAND 3.0: CLOTHING AND TEXTILES

SUB-STRAND 3.6: CLOTHING CONSTRUCTION PROCESSES – WAISTBANDS AND HEMS

1.0 INTRODUCTION

Clothing construction is the process of joining different pieces of fabric together to make garments and other textile articles. It involves several techniques that ensure the finished product is functional, comfortable, durable and attractive.

Some of the important processes involved in clothing construction include:

Pattern drafting.

Fabric selection.

Cutting out garment pieces.

Making openings.

Attaching fastenings.

Constructing pockets.

Attaching waistbands.

Finishing garment edges using hems.

Adding decorative trimmings.

Pressing and evaluating the finished garment.

In this sub-strand, learners focus on two important clothing construction processes:

Hems: Techniques used to finish raw edges of garments and textile articles.

Waistbands: Fabric sections attached around the waist of garments to provide support, shape, comfort and a neat finish.

These processes are important in making garments such as skirts, trousers, shorts, dresses, blouses and shirts.

PART I: HEMS IN CLOTHING CONSTRUCTION

4.0 MEANING AND DEFINITION OF A HEM

Definition of a hem

A hem is the finished edge of a garment or textile article formed by folding the raw edge of fabric inwards and securing it using hand stitches, machine stitches or other suitable finishing techniques.

Hemming is the process of preparing, folding and securing the raw edges of fabric to produce a neat and durable finish.

Examples of garment areas where hems are commonly applied include:

Lower edges of skirts.

Bottom edges of trousers.

Lower edges of dresses.

Sleeves of shirts and blouses.

Lower edges of blouses and shirts.

Shorts.

Aprons.

Curtains.

Tablecloths.

Pillowcases.

4.1 Importance of hemming in clothing construction

Hemming is an important finishing process because it:

Prevents fraying: It encloses or secures raw fabric edges to prevent threads from coming out.

Improves appearance: It gives garments a neat, professional and attractive finish.

Increases durability: Properly constructed hems reduce damage caused by frequent washing and wearing.

Maintains garment shape: A correctly made hem helps the garment retain its intended shape.

Provides a suitable garment length: Hemming allows the garment to be finished at the desired length.

Improves comfort: A smooth hem prevents rough fabric edges from irritating the skin.

Adds decorative value: Decorative hems can improve the appearance of garments.

Strengthens garment edges: A properly secured hem reduces excessive stretching and wear at the edge.

Improves garment value: Well-finished garments look more attractive and professionally made.

Provides flexibility in design: Different hemming techniques can be selected depending on the fabric and garment style.

5.0 TYPES OF HEMS

There are different types of hems used in clothing construction. The choice depends on:

Type of fabric.

Weight and thickness of fabric.

Garment design.

Position of the hem.

Desired appearance.

Available sewing equipment.

Purpose of the garment.

The main types include:

5.1 Single-fold hem

Definition: A single-fold hem is made by turning the raw edge of fabric once towards the wrong side and securing it with stitching.

Construction procedure:

Prepare the raw edge of the fabric.

Determine the required hem allowance.

Turn the raw edge towards the wrong side of the fabric.

Fold the fabric once to the required width.

Press the fold using an iron.

Pin or tack the folded edge in position.

Stitch close to the folded edge.

Remove pins or tacking stitches.

Press the finished hem.

Uses:

Lightweight garments.

Curtains.

Simple household articles.

Garments where the raw edge has already been neatened.

Advantages:

Easy and quick to make.

Uses little fabric.

Suitable for lightweight materials.

Produces a simple finish.

Disadvantages:

The raw edge may fray if it is not neatened.

It may not be suitable for fabrics that fray easily.

It may produce a less durable finish than a double-fold hem.

5.2 Double-fold hem

Definition: A double-fold hem is made by folding the raw edge of fabric twice towards the wrong side and securing the folds with stitching.

It is one of the most commonly used hems in clothing construction.

Construction procedure:

Measure the required hem allowance.

Turn the raw edge towards the wrong side of the fabric.

Make the first fold and press it.

Fold the fabric a second time to enclose the raw edge.

Press the second fold carefully.

Pin or tack the fold.

Machine-stitch or hand-stitch close to the inner folded edge.

Remove tacking stitches.

Press the completed hem.

Uses:

Skirts.

Trousers.

Shorts.

Dresses.

Shirts.

Blouses.

Household linen.

Advantages:

Encloses raw fabric edges.

Prevents fraying.

Produces a neat finish.

Is durable when correctly stitched.

Suitable for many medium-weight fabrics.

Disadvantages:

Uses more fabric than a single-fold hem.

May create bulk on thick fabrics.

Requires accurate folding and pressing.

5.3 Narrow hem

Definition: A narrow hem is a small, closely folded hem made by turning the raw fabric edge inwards twice and stitching it securely.

It is particularly useful when a lightweight fabric requires a delicate and neat finish.

Construction procedure:

Trim the raw edge evenly.

Turn a very small amount of fabric towards the wrong side.

Press the fold.

Turn the fabric again to enclose the raw edge.

Press carefully.

Stitch close to the inner folded edge.

Trim loose threads.

Press the completed hem.

Uses:

Chiffon garments.

Lightweight cotton garments.

Scarves.

Lightweight dresses.

Blouses.

Decorative textile articles.

Advantages:

Produces a delicate finish.

Uses little fabric.

Reduces bulk.

Is suitable for lightweight fabrics.

Disadvantages:

Requires careful handling.

May be difficult to make on very slippery fabrics.

Can become uneven if the folds are not accurately measured.

5.4 Blind hem

Definition: A blind hem is a type of hem constructed so that the stitches are almost invisible on the right side of the garment.

It is commonly used when a visible line of stitching would affect the appearance of a garment.

Construction procedure:

Prepare the raw edge by neatening it where necessary.

Fold the hem allowance towards the wrong side.

Fold back a small section of the hem so that the edge to be caught is exposed.

Pin or tack the fold.

Use a blind-hem stitch by hand or with a sewing machine.

Ensure that only tiny stitches catch the outer fabric.

Remove tacking stitches.

Press gently.

Uses:

Formal trousers.

Skirts.

Dresses.

School uniforms.

Formal wear.

Curtains.

Advantages:

Produces an almost invisible finish.

Maintains the appearance of the garment.

Is suitable for formal garments.

Gives a professional finish.

Disadvantages:

Requires skill and practice.

Can be time-consuming when made by hand.

Incorrect stitching may show on the right side.

5.5 Slip-stitched hem

Definition: A slip-stitched hem is a hem secured using small, almost invisible hand stitches that catch only a few threads of the outer fabric.

Construction procedure:

Turn the hem allowance towards the wrong side.

Press and pin the fold.

Thread a hand-sewing needle with a suitable thread.

Secure the thread inside the folded hem.

Take a tiny stitch through a few threads of the garment fabric.

Move the needle along the folded edge.

Repeat the stitches at regular intervals.

Secure the thread neatly.

Press the hem lightly.

Uses:

Formal dresses.

Skirts.

Delicate garments.

Hand-finished garments.

Garments made from fine fabrics.

Advantages:

Produces an almost invisible finish.

Gives a neat appearance.

Allows flexible hand finishing.

Is suitable for delicate garments.

Disadvantages:

Takes longer to make.

Requires good hand-sewing skills.

May become loose if stitches are poorly secured.

5.6 Machine-stitched hem

Definition: A machine-stitched hem is a hem secured using a sewing machine after the fabric edge has been folded and pressed.

Construction procedure:

Measure the required hem allowance.

Fold the raw edge towards the wrong side.

Fold again where a double-fold hem is required.

Press the fold.

Pin or tack the hem.

Position the garment under the presser foot.

Lower the presser foot.

Stitch evenly along the folded edge.

Secure the beginning and end of the stitching.

Trim loose threads and press.

Uses:

Everyday garments.

School uniforms.

Shirts.

Trousers.

Skirts.

Shorts.

Advantages:

Saves time.

Produces strong and even stitches.

Is suitable for mass garment production.

Gives a consistent finish.

Disadvantages:

The stitching may be visible.

Poor machine control may result in uneven stitching.

Requires a functioning sewing machine.

5.7 False hem

Definition: A false hem is a hem finished using an additional strip of fabric or a facing attached to the lower edge of a garment instead of folding the garment fabric alone.

It is particularly useful where the garment fabric is insufficient for an ordinary hem or where a bulky fold would affect the garment's appearance.

Construction procedure:

Measure the required length of the garment.

Determine the required hem depth.

Cut a suitable strip of fabric.

Ensure that the strip is long enough to fit around the garment edge.

Join the ends of the strip where necessary.

Place the strip against the garment edge, right sides together.

Stitch the strip to the garment.

Turn the strip towards the wrong side.

Press the seam neatly.

Secure the lower edge using suitable hand or machine stitches.

Press the completed hem.

Uses:

Dresses.

Skirts.

Garments with insufficient hem allowance.

Garments made from bulky fabrics.

Garments requiring a different finishing fabric.

Advantages:

Provides additional length where fabric is insufficient.

Reduces excessive bulk in some garments.

Allows decorative finishing.

Can improve garment appearance.

Disadvantages:

Requires additional fabric.

Takes more time to construct.

Requires accurate attachment to avoid unevenness.

5.8 Rolled hem

Definition: A rolled hem is a very narrow hem in which the raw edge is rolled inwards and secured using small stitches or a suitable machine hemming technique.

Uses:

Scarves.

Lightweight dresses.

Chiffon blouses.

Handkerchiefs.

Lightweight decorative fabrics.

Advantages:

Gives a delicate finish.

Prevents fraying.

Creates little bulk.

Is suitable for lightweight materials.

Disadvantages:

Requires accuracy.

Can be difficult to make on slippery fabrics.

May distort if the fabric is pulled during stitching.

6.0 COMPARISON OF DIFFERENT TYPES OF HEMS

Type of hem	Main characteristic	Common application
Single-fold	Fabric folded once	Simple household articles
Double-fold	Fabric folded twice	Trousers and skirts
Narrow hem	Very small double fold	Chiffon and scarves
Blind hem	Almost invisible stitches	Formal trousers
Slip-stitched hem	Small hand stitches	Formal dresses
Machine-stitched hem	Machine stitching	Everyday clothing
False hem	Additional fabric strip	Dresses and skirts
Rolled hem	Narrow rolled edge	Lightweight scarves

7.0 FACTORS TO CONSIDER WHEN SELECTING A HEM

The following factors should be considered when selecting a suitable hem:

Weight of fabric: Lightweight fabrics may require narrow or rolled hems, while heavier fabrics may require suitable wider finishing methods.

Thickness of fabric: Thick fabrics require techniques that avoid excessive bulk.

Type of garment: Formal trousers may require a blind hem, while everyday shorts may use a machine-stitched hem.

Position of the hem: A sleeve hem may require a different technique from the lower edge of a skirt.

Garment design: Decorative garments may require special hemming techniques.

Fabric texture: Slippery fabrics require careful handling to prevent distortion.

Durability required: Children's clothing and school uniforms require secure hems because they are frequently washed and worn.

Available equipment: The selected method should match the available sewing tools and machines.

Skill of the maker: Some hems require advanced sewing skills.

Amount of fabric available: A false hem may be suitable where there is insufficient fabric for a normal hem.

8.0 TOOLS AND EQUIPMENT USED IN HEM CONSTRUCTION




5



The tools and equipment used include:

Tool/equipment	Use
Measuring tape	Measuring hem allowance and garment length
Tailor's chalk	Marking folding lines
Dressmaking scissors	Cutting excess fabric
Pins	Holding folds in position
Hand-sewing needles	Making hand stitches
Sewing machine	Making machine stitches
Sewing thread	Securing the hem
Iron	Pressing folds and finished hems
Ironing board	Supporting fabric during pressing
Seam ripper	Removing incorrect stitches
Ruler	Measuring and marking straight lines
Thimble	Protecting fingers during hand sewing

9.0 GENERAL PROCEDURE FOR MAKING A HEM

The following procedure can be followed when constructing an ordinary double-fold hem:

Step 1: Prepare the garment

Ensure that the garment has been correctly assembled.

Check the garment length.

Ensure that the lower edge is even.

Step 2: Measure the hem allowance

Decide on the required hem depth.

Use a measuring tape or ruler.

Mark the hem allowance using tailor's chalk.

Step 3: Fold the fabric

Turn the raw edge towards the wrong side.

Fold it to the required width.

Press the fold.

Step 4: Enclose the raw edge

Fold the fabric a second time.

Ensure that the raw edge is completely enclosed.

Press the fold.

Step 5: Secure the fold

Use pins or tacking stitches.

Ensure that the fold does not shift during sewing.

Step 6: Stitch the hem

Use a suitable hand stitch or machine stitch.

Keep the stitching even.

Avoid pulling the fabric.

Step 7: Finish the hem

Remove pins or tacking stitches.

Trim loose threads.

Inspect the stitching.

Step 8: Press the completed hem

Press using a suitable temperature.

Avoid stretching the fabric.

Allow the garment to cool before handling.

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PART II: WAISTBANDS IN CLOTHING CONSTRUCTION

10.0 MEANING AND DEFINITION OF A WAISTBAND

Definition: A waistband is a strip of fabric attached to the waistline of a garment to finish, strengthen and support the waist edge while helping the garment fit comfortably around the waist.

A waistband is commonly found on garments such as:

Skirts.

Trousers.

Shorts.

School uniforms.

Some dresses.

Traditional garments.

Workwear.

The waistband may be made from the same fabric as the garment or a different fabric for decorative purposes.

10.1 Functions of a waistband

A waistband performs several important functions in clothing construction.

Supports the waistline: It strengthens the upper edge of a garment and helps it maintain its shape.

Provides a comfortable fit: It helps the garment fit securely around the wearer's waist.

Finishes the raw waist edge: It encloses the raw edge, giving the garment a neat appearance.

Prevents stretching: It helps prevent excessive stretching of the waistline during wearing.

Holds the garment in position: It helps prevent skirts, shorts and trousers from slipping down.

Provides support for fastenings: It can accommodate buttons, hooks, press studs and other fastenings.

Improves appearance: A well-made waistband gives the garment a professional finish.

Enhances garment design: Different waistband styles can contribute to the overall appearance of a garment.

Improves durability: It reinforces an area that experiences repeated movement and pulling.

Provides a base for belt loops: In trousers and some skirts, belt loops are attached to the waistband to hold a belt.

11.0 TYPES OF WAISTBANDS

Different waistband designs are used depending on the garment style, fabric and intended fit.

11.1 Straight waistband

Definition: A straight waistband is a waistband made from a straight strip of fabric attached to the waistline of a garment.

It is commonly used in skirts, trousers and shorts.

Characteristics:

It is generally cut as a straight rectangular strip.

It provides a firm finish around the waist.

It is often strengthened using interfacing.

It can be fastened using buttons, hooks or press studs.

Construction procedure:

Measure the waistline of the garment.

Determine the required waistband width.

Add suitable seam allowances.

Cut the waistband strip.

Cut a suitable strip of interfacing.

Attach the interfacing to the wrong side of the waistband.

Fold the waistband lengthwise, wrong sides together.

Press the fold.

Attach one raw edge of the waistband to the garment waistline, right sides together.

Stitch along the waistline.

Trim and grade the seam allowance where necessary.

Fold the remaining waistband edge towards the wrong side.

Turn the waistband to the inside.

Secure the inner edge using hand or machine stitching.

Make the required fastening.

Press the finished waistband.

Uses:

School skirts.

Formal skirts.

Trousers.

Shorts.

Work uniforms.

11.2 Shaped waistband

Definition: A shaped waistband is a waistband designed to follow the natural curve of the waist and hips.

It is usually wider at some sections and narrower at others, depending on the garment design.

Characteristics:

It follows the body's contours.

It may be cut in several sections.

It provides a close-fitting finish.

It often requires interfacing.

Uses:

Fitted skirts.

Women's trousers.

Formal garments.

Specially designed dresses.

Advantages:

Provides a close and comfortable fit.

Follows the natural body shape.

Gives a neat appearance.

Improves the shape of fitted garments.

Disadvantages:

Requires accurate pattern drafting.

Can be more difficult to construct.

Requires careful fitting.

May require more fabric and sewing time.

11.3 Elasticated waistband

Definition: An elasticated waistband is a waistband that contains elastic to allow the garment to stretch and fit different waist sizes.

Construction procedure:

Measure the waistline.

Determine the required elastic length according to the garment design and elastic stretch.

Cut a fabric casing or waistband strip.

Join the waistband ends where necessary.

Attach the waistband or prepare the casing.

Leave a small opening for inserting elastic.

Use a safety pin or bodkin to guide the elastic through the casing.

Overlap and securely join the elastic ends.

Distribute the gathers evenly.

Close the opening.

Stitch the waistband where required.

Press lightly, avoiding excessive heat on the elastic.

Uses:

Sports shorts.

Pyjamas.

Casual skirts.

Children's clothing.

Tracksuit trousers.

Comfortable everyday garments.

Advantages:

Allows easy movement.

Provides flexibility in fitting.

Is comfortable to wear.

Makes dressing easier.

Can accommodate slight changes in waist size.

Disadvantages:

Elastic may lose its stretch over time.

Poorly distributed gathers may look untidy.

Excessively tight elastic may cause discomfort.

11.4 Faced waistband

Definition: A faced waistband is a waistband finished using a separate facing fabric attached to the waistline to cover the raw edges and provide a neat finish.

It may be used where a conventional wide waistband is not desired.

Construction procedure:

Prepare the garment waistline.

Draft or trace the waistband facing.

Cut the facing fabric.

Apply suitable interfacing where necessary.

Join facing sections if required.

Attach the facing to the waistline, right sides together.

Stitch along the waistline.

Trim and clip curved seam allowances where necessary.

Turn the facing to the wrong side.

Understitch where appropriate.

Secure the facing neatly.

Press the finished waistline.

Uses:

Fitted skirts.

Dresses.

Trousers.

Garments with concealed waist finishes.

Advantages:

Produces a smooth finish.

Avoids an additional visible waistband.

Is suitable for fitted garments.

Gives a neat interior finish.

11.5 Drawstring waistband

Definition: A drawstring waistband is a waistband containing a cord, ribbon or string that can be tightened or loosened to adjust the garment's fit.

Construction procedure:

Prepare the garment waistline.

Fold the upper edge to form a casing.

Stitch the casing, leaving an opening.

Make a suitable buttonhole or eyelet opening for the drawstring where required.

Insert the drawstring using a safety pin or bodkin.

Pull the drawstring through the casing.

Adjust the length of the drawstring.

Finish the ends to prevent fraying.

Uses:

Casual trousers.

Pyjamas.

Sportswear.

Casual shorts.

Loose-fitting skirts.

Advantages:

Allows adjustment of garment fit.

Is easy to construct.

Provides comfort.

Can be decorative.

Disadvantages:

May loosen during wearing.

Drawstrings may become damaged.

Poorly constructed casings may twist.

12.0 MATERIALS USED IN WAISTBAND CONSTRUCTION

The following materials are commonly used:

Main fabric: Used to construct the waistband.

Interfacing: Used to strengthen and support the waistband.

Sewing thread: Used to join and secure fabric sections.

Elastic: Used in elasticated waistbands.

Buttons: Used as fastenings.

Hooks and bars: Used to secure waistband openings.

Press studs: Used for quick fastening.

Zips: Used where a garment design requires a zip opening.

Drawstrings: Used to adjust waistband tightness.

Bias binding: May be used to finish certain waistband edges.

13.0 INTERFACING IN WAISTBAND CONSTRUCTION

Definition: Interfacing is a material attached to the wrong side of a garment fabric to provide additional support, firmness, shape and stability.

It is especially important in waistband construction because waistbands need to retain their shape during wearing and washing.



13.1 Importance of interfacing

Strengthens the waistband.

Prevents excessive stretching.

Helps the waistband maintain its shape.

Provides firmness.

Improves the appearance of the finished garment.

Supports buttonholes and fastenings.

Reduces wrinkling and distortion.

Improves the durability of the waistband.

13.2 Types of interfacing

A. Fusible interfacing

This is interfacing with an adhesive coating that is activated by heat and pressure.

It is attached using a suitable iron.

It is quick to apply.

It is available in different weights.

It must be compatible with the garment fabric.

B. Sew-in interfacing

This is interfacing attached to the garment using stitches rather than heat-activated adhesive.

It is suitable for fabrics that may be damaged by ironing.

It can be used on delicate fabrics.

It requires additional stitching.

It may provide a softer finish depending on the material.

C. Woven interfacing

This is interfacing manufactured using woven threads.

It has a woven structure.

It provides good stability.

It is available in different weights.

It is useful where the garment needs a more structured finish.

D. Non-woven interfacing

This is interfacing made by bonding fibres together rather than weaving them.

It is available in different thicknesses.

It is easy to cut.

It is commonly used in garment construction.

It may be fusible or sew-in.

13.3 Precautions when applying interfacing

Select interfacing suitable for the fabric weight.

Follow the manufacturer's instructions.

Test the interfacing on a fabric scrap.

Use an appropriate iron temperature.

Avoid moving the iron excessively when applying fusible interfacing.

Allow the fabric to cool before handling.

Ensure that the interfacing is correctly positioned.

Avoid applying excessive heat to heat-sensitive fabrics.

14.0 PROCEDURE FOR PREPARING AND ATTACHING A STRAIGHT WAISTBAND

This is an important practical skill in the construction of skirts, trousers and shorts.

14.1 Equipment required

Sewing machine.

Measuring tape.

Dressmaking scissors.

Hand-sewing needles.

Pins.

Tailor's chalk.

Iron and ironing board.

Suitable sewing thread.

Fabric.

Interfacing.

14.2 Preparation of the waistband

Measure the waistline: Measure the finished waistline of the garment accurately.

Determine the waistband width: Decide on the finished width depending on the garment design.

Calculate the waistband length: Include the required seam allowances and fastening extension.

Cut the waistband: Cut the fabric strip accurately along the required grain.

Cut interfacing: Cut interfacing to the required size.

Apply interfacing: Attach the interfacing to the wrong side of the waistband where appropriate.

Fold the waistband: Fold it lengthwise and press.

Prepare the ends: Finish the waistband ends according to the fastening design.

14.3 Attaching the waistband

Prepare the garment waistline by removing loose threads.

Divide the garment waistline into suitable sections.

Divide the waistband into corresponding sections.

Match the markings and pin the waistband to the garment.

Ensure that the right sides of the fabric face each other.

Stitch the waistband to the garment.

Trim and grade the seam allowance where necessary.

Turn the waistband into its correct position.

Fold the inner raw edge over the waistline seam.

Secure the inner edge using suitable hand or machine stitching.

Attach the required fastening.

Press the waistband neatly.

Inspect the finished waistband for accuracy and quality.

15.0 FASTENINGS USED ON WAISTBANDS

Fastenings are devices used to hold garment openings together.

Common fastenings include:




trimmingshop
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15.1 Buttons and buttonholes

Buttons are attached to one side of a garment while buttonholes are made on the opposite side.

Uses:

School skirts.

Trousers.

Shorts.

Casual garments.

15.2 Hooks and bars

These are small metal fastenings attached to opposite sides of a garment opening.

Uses:

Formal skirts.

Formal trousers.

Waistbands requiring concealed fastenings.

15.3 Press studs

These are fasteners consisting of two matching parts that snap together when pressed.

Uses:

Children's clothing.

Casual wear.

Some trousers and shorts.

15.4 Zips

A zip is a fastening consisting of interlocking teeth or coils operated by a slider.

Uses:

Skirts.

Trousers.

Shorts.

Dresses.

16.0 QUALITIES OF WELL-MADE HEMS

A good hem should have the following qualities:

Evenness: The hem should have a uniform width throughout.

Neatness: The finished edge should be clean and attractive.

Correct length: The garment should have the intended finished length.

Secure stitching: Stitches should be firmly secured.

Invisible or appropriate stitching: The stitches should suit the selected hemming technique.

Absence of puckering: The fabric should lie flat without unwanted gathers.

Absence of loose threads: All loose threads should be trimmed.

Smooth pressing: The hem should be properly pressed.

Durability: The hem should withstand normal wearing and washing.

Comfort: The finished edge should not irritate the wearer.

No distortion: The garment should hang naturally.

Suitable technique: The selected hem should match the fabric and garment design.

17.0 QUALITIES OF A WELL-MADE WAISTBAND

A good waistband should have the following qualities:

It should fit the wearer's waist comfortably.

It should be firmly attached to the garment.

It should have an even width.

It should be correctly positioned.

It should be properly interfaced where necessary.

It should not twist or roll unnecessarily.

It should have secure and appropriate fastenings.

It should not have puckers or unwanted gathers.

Its seams should be neat and strong.

Its edges should be properly finished.

It should maintain its shape after washing.

It should allow comfortable movement.

It should have a neat appearance on both the right and wrong sides.

It should be suitable for the garment design.

It should be durable.

18.0 COMMON DEFECTS IN HEMS AND WAISTBANDS

Defect	Possible cause	Remedy
Uneven hem	Inaccurate measuring	Measure and mark accurately
Puckered hem	Excessive fabric tension	Adjust tension and handle fabric carefully
Loose stitches	Incorrect machine tension or poor securing	Correct machine settings and secure stitches
Twisted waistband	Uneven attachment	Match markings before stitching
Stretched waistline	Poor handling or lack of stabilisation	Stabilise and handle fabric carefully
Bulky waistband	Excessive seam allowances	Trim and grade seams appropriately
Visible blind stitches	Stitches catching too much outer fabric	Take smaller stitches
Fraying edges	Raw edges not enclosed or neatened	Use a suitable edge-finishing technique
Uneven waistband width	Inaccurate cutting and folding	Measure and press carefully
Loose elastic	Elastic too long or worn out	Replace with suitable elastic

19.0 SAFETY PRECAUTIONS DURING HEM AND WAISTBAND CONSTRUCTION

Safety is important when using sewing equipment and materials.

19.1 Safety when using scissors

Use sharp dressmaking scissors for fabric.

Pass scissors with the handles facing the other person.

Keep scissors closed when not in use.

Do not run while carrying scissors.

Store scissors safely after use.

19.2 Safety when using needles and pins

Keep needles and pins in a pincushion.

Avoid placing pins in the mouth.

Remove pins before machine stitching.

Count and collect pins after completing the activity.

Dispose of broken needles safely.

19.3 Safety when using a sewing machine

Read and follow the machine operating instructions.

Keep fingers away from the needle.

Switch off the machine when changing the needle.

Do not pull fabric forcefully during stitching.

Keep the working area free from unnecessary materials.

Switch off and unplug the machine when not in use.

19.4 Safety when using an iron

Place the iron on a stable surface.

Select the correct temperature for the fabric.

Avoid touching the hot soleplate.

Switch off the iron after use.

Keep electrical cables away from water.

Allow the iron to cool before storing it.

19.5 Proper disposal of fabric and thread waste

Collect fabric clippings in a waste container.

Put thread pieces in a designated waste bin.

Reuse suitable fabric scraps for practice samples.

Avoid leaving pins and needles in fabric waste.

Keep the sewing area clean.

Reuse suitable fabric pieces for patchwork and decorative projects.

PART III: PRACTICAL APPLICATION AND COMPETENCY DEVELOPMENT

20.0 PRACTICAL ACTIVITY: MAKING DIFFERENT TYPES OF HEMS

Learning activity: Learners make samples of different types of hems.

Materials required:

Cotton fabric.

Lightweight fabric.

Sewing thread.

Needles.

Pins.

Measuring tape.

Ruler.

Tailor's chalk.

Scissors.

Iron.

Sewing machine.

Procedure:

Collect the required materials and equipment.

Cut equal-sized fabric samples.

Label each sample according to the type of hem to be constructed.

Construct a single-fold hem.

Construct a double-fold hem.

Construct a narrow hem.

Construct a blind hem.

Construct a false hem.

Construct a rolled hem.

Press each completed sample.

Mount the samples in a practical work folder.

Display the completed samples.

Exchange samples with classmates for peer assessment.

Identify strengths and weaknesses in each sample.

Suggest improvements.

21.0 PRACTICAL ACTIVITY: PREPARING AND ATTACHING A WAISTBAND

Learning activity: Learners prepare and attach a straight waistband to a simple skirt or fabric sample.

Procedure:

Prepare a skirt or waistline sample.

Measure the waistline.

Determine the required waistband dimensions.

Cut the waistband fabric.

Cut and attach suitable interfacing.

Prepare the waistband ends.

Fold and press the waistband.

Attach the waistband to the garment.

Finish the inner waistband edge.

Attach a suitable fastening.

Press the completed waistband.

Assess the finished work.

22.0 EVALUATION OF HEMS AND WAISTBANDS

Evaluation is the process of examining a finished garment to determine whether it meets the required standards.

22.1 Evaluation checklist for hems

Assessment criterion	Yes	No
Is the hem even throughout?		
Is the hem allowance accurate?		
Are the stitches secure?		
Is the raw edge properly finished?		
Is the hem free from puckering?		
Is the hem properly pressed?		
Is the garment length correct?		
Are loose threads removed?		

22.2 Evaluation checklist for waistbands

Assessment criterion	Yes	No
Is the waistband correctly positioned?		
Is the waistband firmly attached?		
Is the width even?		
Is the waistband comfortable?		

Is the interfacing correctly applied?		
Are the fastenings secure?		
Are the edges neatly finished?		
Is the waistband properly pressed?		

PART IV: INTEGRATED CLOTHING CONSTRUCTION PROJECT

23.0 PROJECT: MAKING A GARMENT OF CHOICE

The learner is expected to select and make a garment of choice demonstrating different clothing construction processes.

The project should demonstrate the learner's ability to plan, select materials, draft patterns, construct and finish a garment.

23.1 Suggested garments

The learner may select one of the following:

A simple skirt.

A pair of shorts.

A pair of trousers.

A simple dress.

An apron.

A child's garment.


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23.2 Project requirements

The garment should demonstrate the following construction processes:

Drafting a pattern.

Selecting suitable fabric.

Constructing a pocket.

Making an opening.

Attaching fastenings and trimmings.

Constructing and attaching a waistband.

Managing and finishing the hem.

23.3 Stage 1: Planning the project

The learner should:

Select a suitable garment.

Identify the purpose of the garment.

Identify the intended wearer.

Determine the materials required.

Prepare a list of tools and equipment.

Estimate the amount of fabric required.

Prepare a simple project work plan.

Observe safety precautions.

23.4 Stage 2: Pattern drafting

Definition: Pattern drafting is the process of preparing a template representing the different parts of a garment using body measurements and suitable pattern-making techniques.

The learner should:

Take accurate body measurements.

Record the measurements.

Select an appropriate pattern style.

Draft the pattern on pattern paper.

Include necessary seam allowances.

Mark the grainline.

Mark darts, notches and other construction details.

Label the different pattern pieces.

Check pattern accuracy before cutting fabric.

23.5 Stage 3: Fabric selection

The learner should select fabric based on:

Fibre content.

Weight.

Texture.

Colour.

Durability.

Ease of care.

Suitability for the garment.

Cost and availability.

Comfort.

Personal preference and intended use.

Examples:

Garment	Suitable fabric
School skirt	Cotton blend or suitable uniform fabric
Shorts	Cotton twill or denim
Casual dress	Cotton or suitable polyester blend
Apron	Cotton or cotton drill
Formal trousers	Suiting fabric

23.6 Stage 4: Pocket construction

Definition: A pocket is a small fabric section attached to or incorporated into a garment to provide space for carrying small items.

Types of pockets include:

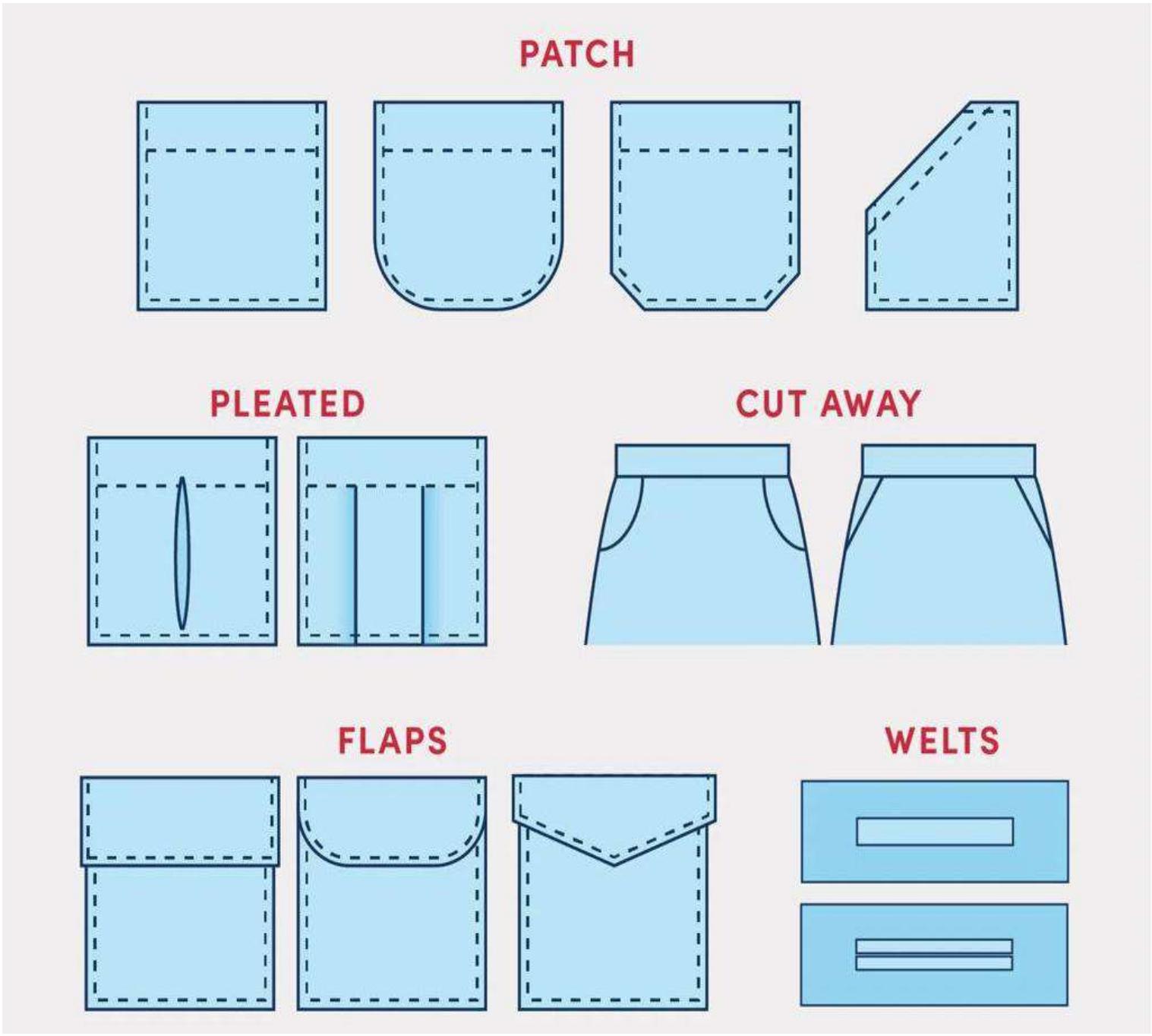
Patch pocket.

In-seam pocket.

Welt pocket.

Slanted pocket.

Bound pocket.



The learner should:

Select a suitable pocket style.

Draft the pocket pattern.

Cut the pocket pieces.

Neaten the raw edges where required.

Construct the pocket.

Position it correctly on the garment.

Stitch it securely.

Press the completed pocket.

23.7 Stage 5: Making an opening

Definition: An opening is a planned gap or slit in a garment that allows the wearer to put on, remove or adjust the garment.

Examples include:

Side opening.

Centre-back opening.

Front opening.

Sleeve opening.

Trouser fly opening.

The learner should:

Identify the required opening.

Mark its position.

Prepare the fabric.

Reinforce the opening where necessary.

Construct the opening using a suitable method.

Ensure that it is neat and functional.

23.8 Stage 6: Attaching fastenings and trimmings

Fastenings hold garment openings together, while **trimmings** are decorative or functional materials added to enhance the garment.

Examples of fastenings:

Buttons.

Zips.

Hooks and bars.

Press studs.

Ties.

Examples of trimmings:

Lace.

Ribbons.

Braid.

Decorative piping.

Embroidery.

Decorative buttons.

The learner should select fastenings and trimmings that are appropriate for the garment.

23.9 Stage 7: Waistband construction

The learner should:

Select the waistband style.

Measure the waistline.

Draft the waistband pattern.

Cut the fabric and interfacing.

Prepare the waistband.

Attach it to the garment.

Finish the inner edge.

Attach the fastening.

Press the finished waistband.

23.10 Stage 8: Hem management

The learner should:

Determine the correct garment length.

Measure the hem allowance.

Mark the folding line.

Select an appropriate hem type.

Fold and press the fabric.

Secure the hem using suitable stitching.

Remove loose threads.

Press the completed hem.

Inspect the finished garment.

23.11 Stage 9: Final evaluation

The learner should examine:

Accuracy of measurements.

Pattern suitability.

Fabric selection.

Pocket construction.

Opening construction.

Quality of fastenings.

Waistband attachment.

Hem management.

Neatness of stitching.

Overall appearance.

Comfort and functionality.

23.12 Stage 10: Project report

The learner should prepare a written report containing:

Project title.

Introduction.

Objectives.

Garment selected.

Materials and equipment used.

Body measurements taken.

Pattern drafting process.

Fabric selection and reasons.

Construction procedures followed.

Challenges encountered.

Solutions to the challenges.

Safety precautions observed.

Evaluation of the finished garment.

Lessons learnt.

Conclusion.

23.13 Displaying the finished garment

The learner should:

Press the garment properly.

Display it on a suitable mannequin or hanger.

Attach a label showing the garment name.

Display the project report.

Explain the construction processes used.

Respond to questions from peers and the teacher.

PART VI: REVISION EXERCISES

GRADE 11 HOME SCIENCE

SUB-STRAND 3.6

SECTION A: MULTIPLE-CHOICE QUESTIONS (30 MARKS)

Instructions: Answer all questions. Choose the correct answer from the alternatives A, B, C and D.

1. What is a hem in clothing construction?

A. A strip of fabric attached to the waistline.

B. A finished edge of a garment formed by folding and securing fabric.

C. A decorative material attached to a garment.

D. A fastening used to close an opening.

2. The main purpose of hemming is to:

A. Increase the weight of a garment.

B. Make a garment shorter.

C. Finish raw fabric edges and prevent fraying.

D. Increase the cost of a garment.

3. Which type of hem is formed by folding the raw edge of fabric twice towards the wrong side?

A. Single-fold hem.

B. Double-fold hem.

C. False hem.

D. Blind hem.

4. A hem whose stitches are almost invisible on the right side of the garment is called:

A. Machine-stitched hem.

B. Single-fold hem.

C. Blind hem.

D. Rolled hem.

5. Which hem is particularly suitable for lightweight fabrics such as chiffon?

A. Narrow hem.

B. Heavy double-fold hem.

C. False hem.

D. Thick decorative hem.

6. A false hem is made using:

A. A metal strip.

B. An additional strip of fabric.

C. An elastic cord only.

D. A buttonhole.

7. Which tool is most suitable for measuring the hem allowance?

A. Thimble.

B. Measuring tape.

C. Seam ripper.

D. Hand-sewing needle.

8. Which equipment is used to press folded hems?

A. Sewing machine.

B. Measuring tape.

C. Iron.

D. Dressmaking scissors.

9. A hem that has a very narrow rolled edge is called:

A. Rolled hem.

B. Blind hem.

C. False hem.

D. Single-fold hem.

10. Which of the following is an advantage of a double-fold hem?

A. It leaves raw edges exposed.

B. It encloses raw edges and prevents fraying.

C. It increases fabric stretching.

D. It makes stitching unnecessary.

11. What is a waistband?

A. A strip of fabric attached around the waistline of a garment.

B. A decorative strip attached to a sleeve.

C. A piece of fabric used to construct a pocket.

D. A strip used to cover a trouser opening.

12. Which of the following is a major function of a waistband?

A. Increasing the length of a garment.

B. Providing support and a neat finish at the waist.

C. Making fabric waterproof.

D. Covering the lower edge of a garment.

13. A waistband that contains elastic to provide flexibility is called:

A. Shaped waistband.

B. Straight waistband.

C. Elasticated waistband.

D. Faced waistband.

14. Which waistband follows the natural curve of the waist?

A. Straight waistband.

B. Shaped waistband.

C. Drawstring waistband.

D. Elasticated waistband.

15. A waistband containing a cord that can be tightened or loosened is called:

A. Faced waistband.

B. Straight waistband.

C. Drawstring waistband.

D. Shaped waistband.

16. Which material is used to strengthen a waistband?

A. Lace.

B. Interfacing.

C. Ribbon.

D. Decorative braid.

17. The main function of interfacing in waistband construction is to:

A. Make the garment transparent.

B. Strengthen and support the fabric.

C. Increase fabric fraying.

D. Replace sewing thread.

18. Which of the following is a type of interfacing?

A. Fusible interfacing.

B. Decorative lace.

C. Elastic thread.

D. Bias tape only.

19. Which tool is most appropriate for removing incorrect stitches?

A. Seam ripper.

B. Tailor's chalk.

C. Measuring tape.

D. Iron.

20. Which fastening is commonly used to secure formal trouser waistbands?

A. Decorative ribbon.

B. Hook and bar.

C. Lace edging.

D. Fabric patch.

21. What is the most appropriate way of preventing fabric edges from fraying during single-fold hemming?

A. Leaving the raw edge untreated.

B. Neatening the raw edge before folding.

C. Stretching the fabric.

D. Cutting away the folded edge.

22. Which of the following may cause puckering when constructing a hem?

A. Correct thread tension.

B. Careful pressing.

C. Incorrect machine tension.

D. Accurate measuring.

23. What should be done before attaching a waistband to a garment?

A. Remove all garment measurements.

B. Prepare and check the waistline.

C. Cut off the garment waistline.

D. Attach decorative trimmings first.

24. Which of the following is an important quality of a well-made waistband?

A. Uneven width.

B. Loose stitching.

C. Comfortable and accurate fit.

D. Excessive puckering.

25. Which stitch is commonly used to secure a hem almost invisibly by hand?

A. Slip stitch.

B. Running stitch with large visible stitches.

C. Gathering stitch.

D. Tacking stitch only.

26. Why should pins be removed before machine stitching?

A. To increase sewing speed at any cost.

B. To prevent damage to the machine and possible injury.

C. To make the fabric heavier.

D. To increase fabric thickness.

27. A learner is constructing a waistband for school trousers. Which material would help it retain its shape?

A. Interfacing.

B. Loose cotton wool.

C. Decorative ribbon only.

D. Paper.

28. Which action demonstrates responsible environmental practices during clothing construction?

A. Throwing fabric scraps everywhere.

B. Burning all thread waste in the classroom.

C. Reusing suitable fabric scraps and disposing of waste properly.

D. Leaving broken needles on the floor.

29. Why should a garment hem be pressed during construction?

A. To increase the number of seams.

B. To help maintain accurate folds and produce a neat finish.

C. To weaken the fabric.

D. To make the fabric fray.

30. Which of the following is the best way to evaluate a completed waistband?

A. Examining only its colour.

B. Checking its fit, stitching, width, finish and fastening.

C. Checking only the amount of fabric used.

D. Examining only the garment label.

SECTION B: STRUCTURED QUESTIONS (50 MARKS)

Instructions: Answer all questions. Each question carries the marks indicated.

QUESTION 1: INTRODUCTION TO HEMS (8 MARKS)

a) Define the term hem as used in clothing construction. (2 marks)

b) State four reasons why hemming is important in garment construction. (4 marks)

c) Identify two areas of a garment where hems may be applied. (2 marks)

QUESTION 2: TYPES OF HEMS (8 MARKS)

a) Differentiate between a single-fold hem and a double-fold hem. (2 marks)

b) Describe the procedure for constructing a double-fold hem. (4 marks)

c) State two garments or textile articles where a narrow hem may be used. (2 marks)

QUESTION 3: WAISTBANDS (8 MARKS)

a) Define a waistband. (2 marks)

b) State four functions of a waistband in garment construction. (4 marks)

c) Name two types of waistbands used in clothing construction. (2 marks)

QUESTION 4: INTERFACING AND WAISTBAND CONSTRUCTION (8 MARKS)

a) What is interfacing? (2 marks)

b) Explain three reasons why interfacing is used in waistband construction. (3 marks)

c) Outline three steps followed when attaching a straight waistband to a garment. (3 marks)

QUESTION 5: QUALITY AND SAFETY (9 MARKS)

a) State four qualities of a well-made hem. (4 marks)

b) Identify three defects that may occur during waistband construction. (3 marks)

c) State two safety precautions to observe when using a sewing machine. (2 marks)

QUESTION 6: PRACTICAL APPLICATION (9 MARKS)

A Grade 11 learner is making a skirt as part of a clothing construction project.

a) Identify two types of hems that may be used to finish the lower edge of the skirt. (2 marks)

b) Explain three factors that should be considered when selecting a suitable hem for the skirt. (3 marks)

c) Outline four procedures the learner should follow when preparing and attaching the waistband. (4 marks)

SECTION C: TEACHER'S MARKING GUIDE

SECTION A: MULTIPLE-CHOICE ANSWERS

Question	Answer	Question	Answer
1	B	16	B
2	C	17	B
3	B	18	A
4	C	19	A
5	A	20	B
6	B	21	B
7	B	22	C
8	C	23	B
9	A	24	C
10	B	25	A
11	A	26	B
12	B	27	A
13	C	28	C
14	B	29	B
15	C	30	B

SECTION B: SUGGESTED MARKING SCHEME

QUESTION 1 (8 MARKS)

a) A hem is a finished edge of a garment formed by folding the raw fabric edge towards the wrong side and securing it using suitable stitches. (2 marks)

b) Reasons for hemming:

Prevents fraying.

Improves garment appearance.

Increases durability.

Provides the correct garment length.

Improves comfort.

Strengthens garment edges.

Gives a professional finish.

Award 1 mark each for any four correct responses. (4 marks)

c) Areas where hems are applied:

Lower edge of skirts.

Sleeves.

Trouser bottoms.

Dress edges.

Blouse bottoms.

Shorts.

Award 1 mark each for any two. (2 marks)

QUESTION 2 (8 MARKS)

a)

Single-fold hem: The raw edge is folded once towards the wrong side and secured. (1 mark)

Double-fold hem: The raw edge is folded twice towards the wrong side to enclose the raw edge. (1 mark)

b) Procedure:

Measure and mark the required hem allowance.

Fold the raw edge towards the wrong side.

Fold a second time to enclose the raw edge.

Press, pin or tack the fold.

Stitch evenly along the folded edge.

Remove tacking stitches and press.

Award 1 mark each for any four correctly stated steps. (4 marks)

c) Applications:

Lightweight dresses.

Chiffon blouses.

Scarves.

Handkerchiefs.

Award 1 mark each for any two. (2 marks)

QUESTION 3 (8 MARKS)

a) A waistband is a strip of fabric attached around the waistline of a garment to provide support, finish the waist edge and improve the fit. (2 marks)

b) Functions:

Supports the waistline.

Improves garment fit.

Finishes raw waist edges.

Prevents stretching.

Holds the garment in position.

Supports fastenings.

Provides a base for belt loops.

Improves appearance.

Award 1 mark each for any four. (4 marks)

c) Types:

Straight waistband.

Shaped waistband.

Elasticated waistband.

Faced waistband.

Drawstring waistband.

Award 1 mark each for any two. (2 marks)

QUESTION 4 (8 MARKS)

a) Interfacing is a material attached to the wrong side of garment fabric to provide support, firmness and stability. (2 marks)

b) Reasons:

Strengthens the waistband.

Prevents excessive stretching.

Maintains the waistband shape.

Supports fastenings.

Improves durability.

Award 1 mark each for any three. (3 marks)

c) Steps:

Measure and cut the waistband.

Apply suitable interfacing.

Fold and press the waistband.

Match and pin it to the garment waistline.

Stitch the waistband to the garment.

Finish the inner edge.

Attach the fastening.

Award 1 mark each for any three. (3 marks)

QUESTION 5 (9 MARKS)

a) Qualities:

Even width.

Secure stitching.

Neat appearance.

Correct garment length.

No puckering.

No loose threads.

Proper pressing.

Durability.

Award 1 mark each for any four. (4 marks)

b) Defects:

Uneven waistband.

Twisted waistband.

Puckering.

Loose stitches.

Poor fit.

Bulky seams.

Poorly positioned fastenings.

Award 1 mark each for any three. (3 marks)

c) Safety precautions:

Keep fingers away from the machine needle.

Switch off the machine before changing the needle.

Remove pins before machine stitching.

Keep the working area clean.

Do not pull fabric forcefully.

Switch off the machine after use.

Award 1 mark each for any two. (2 marks)

QUESTION 6 (9 MARKS)

a) Types of hems:

Double-fold hem.

Blind hem.

Machine-stitched hem.

Single-fold hem.

False hem.

Award 1 mark each for any two. (2 marks)

b) Factors:

Fabric weight: Lightweight fabrics may require narrow hems, while heavier fabrics need suitable methods that avoid excessive bulk.

Garment design: The hem should complement the skirt design.

Fabric texture: Slippery fabrics require careful hemming techniques.

Desired appearance: Formal skirts may require a less visible hem.

Available fabric: A false hem may be necessary where hem allowance is insufficient.

Award 1 mark each for any three explained factors. (3 marks)

c) Procedures:

Measure the waistline accurately.

Determine and calculate waistband dimensions.

Cut the waistband and suitable interfacing.

Attach the interfacing.

Fold and press the waistband.

Pin the waistband to the garment.

Stitch the waistband to the waistline.

Finish the inner edge and attach fastenings.

Award 1 mark each for any four correctly stated procedures. (4 marks)

GRADE 11 HOME SCIENCE NOTES

AUTHOR: COMPETENCE GROUP

