SCIENCE LESSON NOTES FOR P.4 TERM I

PLANT LIFE

PLANTS

Types of plants

1. Flowering plants
2. Non flowering plants.

Non – flowering plants

These are plants which do not produce flowers.

Examples of non flowering plants.

- Ferns
- Mosses
- Horsetails
- Liverworts
- Conifers

Flowering plants

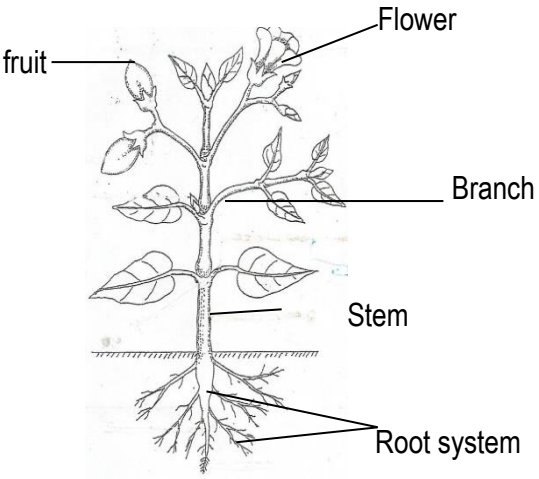
These are plants that bear (produce) flowers.

Examples of flowering plants

- Mangoes
- Maize
- Pawpaws
- Peas
- Coffee
- Cotton
- Oranges
- Grapes
- Jackfruit
- Acacia

STRUCTURE OF A FLOWERING PLANTS

Illustration



Systems of a flowering plants.

1. Shoot system
2. Root system

Shoot system

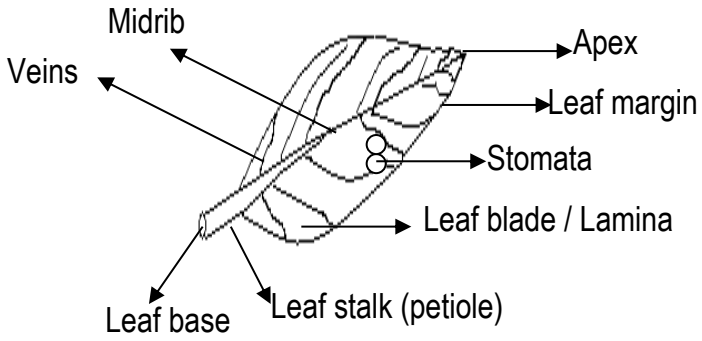
The system of the plant above the ground level.
It develops from the plumule of the seed.

Parts of a shoot system

1. Leaves
2. Fruits
3. Node
4. Terminal bud
5. Stem
6. Flower
7. Internodes
8. Aixllary bud
9. Axil
10. Branch

LEAVES

Part of a leaf



Functions of each part

Leaf stalk (petiole): To supply water to the leaf from the branch / stem.

Leaf base: Fixes the leaf on the stem.

Midrib . Mid vein: Transports water and nutrients from the leaf stalk to veins

Veins:

1. Supply water and minerals from the mid vein to all parts of the leaf.
2. Collect manufactured food from all parts of the leaf to the mid vein.

Stomata:

1. For breathing
2. For transpiration

Lamina (leaf blade)

1. For making food / photosynthesis.

Leaf venation

This is the arrangement of veins in the leaf.

Types of leaf venation

1. Net work leaf venation
2. Parallel leaf venation.

Parallel leaf venation

Example of plants with parallel venation

1. All cereals such as maize, millet, rice, sorghum

2. Grass
3. Sugar cane.

Net work leaf venation

Examples of plants with network venation

1. All legumes such as beans, peas, soya beans, ground nuts
2. Jack fruit
3. Mango plant.

Types of leaves

1. Simple leaves
2. Compound leaves

Simple leaves

These are leaves with one leaflet on the leaf stalk.

Characteristics of simple leaves

1. They have one leaflet on the stalk.
2. They have one leaf stalk

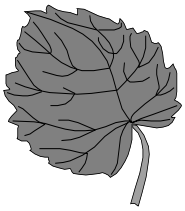
Kinds of simple leaves

- Simple entire

Plants with simple entire leaves

1. Mango
2. Jackfruit
3. Avacado.

- Simple serrated leaves



Example
Black jack.

- **Simple lobbed leaves**

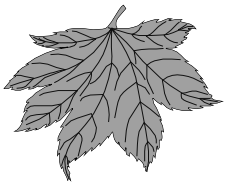
- Simple palmate leaves

Example
Pawpaw

- Simple lancelate leaf
  Illustration

Examples of
Maize , sorghum , wheat , grass

- Simple divided leaf
  Illustration



Compound leaves

These are leaves with more than one leaflet on the stalk.

Characteristics of compound leaves

- They have many leaflets.
- They have many leaf stalks.

Kinds of compound leaves.

- Compound pinnate leaves e.g. acacia.

- **Compound bi – pinnate leaves e.g. Jacaranda**

- **Compound trifoliate e,g. beans, soya.**

- **Compound digitate of cassava**

Uses of leaves to people

(i) Some leaves are eaten as food e.g. cabbage
(ii) For sale
(iii) For making shelter for man.
(iv) For decoration e.g. palm leaves.
(v) For beverage e.g. tea leaves.
(vi) For herbal medicine e.g. mango guavas etc.
(vii) For feeding domestic animals.
(viii) For making mats.

Uses of leaves to a plant

(i) For making food (photosynthesis)
(ii) For breathing
(iii) For transpiration.
(iv) Some store food as the plants e.g. onions.

(v) Some leaves are used for propagation eg. bryophyllum

Transpiration

It is the process through which plants lose water to the atmosphere through leaves.

Importance of transpiration to plants.

- It cools the plants on hot days.
- It helps the plants to suck more water from the soil.

Importance of transpiration to the environment.

- It helps in rain formation.

An experiment to prove that transpiration takes place in leaves.

How plants control the rate of transpiration

- By shedding off the leaves in dry season.
- Some plants have small leaves.
- Some plants have thick leaves with few stomata.
- Some plants have wax on their leaves e.g. banana.
- Some plants have thorns on stems and leaves e.g. cactus, aloevera.
- Some plants develop needle like structured leaves

Factors affecting the rate of transpiration

Factor	Effect
• Size of the leaves:	• The bigger the leaves, the higher the rate of transpiration
• Temperature	• The higher the temperature, the higher the rate of transpiration.
• Humidity	• The higher the humidity, the lower the rate of transpiration.
• Light intensity	• The more the sunlight the higher the rate of transpiration.

Factors

- Speed of wind
- Number of leaves on a plant

Photosynthesis

It is the process by which green plants make their own food.

Photo : means light.

Synthesis: means to make.

Conditions for photosynthesis

Chlorophyll: traps sunlight energy
Sunlight provides energy to the leaf.
Carbondioxide and water: raw materials.
NB: The raw materials for photosynthesis are carbondioxide and water.
The bi – product of photosynthesis is oxygen
The product of photosynthesis is starch

Stems

Uses of a stem to a plant.

1. It transports water and mineral salts from the roots to the leaves.
2. A stem transports food from the leaves to other parts of the plant.
3. A stem supports the leaves and branches of a plant.
4. Some stems store food for the plant e.g. Irish potatoes, sugar cane.

Uses of stems to people

1. Some stems are eaten. e.g. sugarcane, Irish etc
2. Some stems are used for firewood.
3. For herbal medicine.
4. For making timber.
5. For building houses

Uses of stems to other animals

1. Some stems are used as food.
2. Some are habitats for some animals e.g. ants, birds.

Types of stems.

- Upright stems (Erect stems) e.g. Mangoes, Oranges, Maize.
- Climbing stems e.g. cucumber, yam, pea plants, morning glory
- Under ground stems e.g. stem tubers: They are swollen underground stems with stored food e.g. Irish potatoes, coco yams.
- Creeping stems e.g. sweet potatoes.
- Rhizomes e.g. ginger, curry, turmeric. Rhizomes are horizontal underground stems.

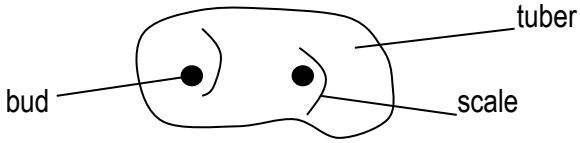
Stem tubers

What are stem tubers?

Stem tubers are swollen underground stems with stored food. Eg irish potatoes funnel, yams

NB : Sugarcane is not a stem tuber because its not found structure for irish potato under the ground.

Structure of the Irish potato



2. Corns. Eg coco yam

Structure of a corn

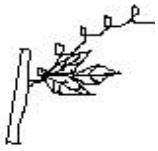
3. Bulb eg onion , garlic

Structure of a bulb

Function of each part

- Foliage leaves : make food
- scale leaf : protects inner parts
- Flesh leaves : store food for a plant
- Stem : attachment of leaves and roots
- Roots : Absorb water and minerals/support the plant

Ways plants climb others

Methods of climbing	Example of plants
i) Using tendrils 	• passion fruits • cucumber • peas • pumpkin
ii) Using hooks or thorns	• bougainvillea.

iii) By twinning (clasping)	• morning glory • sponge plants • some beans

Why do some plants climb others?

1. For support
2. To get enough sunlight.

Root system

It is the part of a plant below the ground level.

Types of root systems

1. Tap root systems.
2. Fibrous root systems.

Part of a tap root system

Illustration,

Function of each part

Main root: supports the plant firmly in the ground.
Lateral roots: supports the plant firmly in the ground.
Root hairs: suck water and mineral salts from the soil by means of osmosis
Root cap: Protects the tip of the roots / helps the root to penetrate through the soil.
Root top: Growing part of the root.

Types of roots.

1. Fibrous roots (structure , examples of plants with)
2.Tap roots (structure , examples of plants with)
3. Adventitious / special roots

These are roots which do not develop from radical but grow on any other part of a plant.

Kinds of Adventitious roots

a) Prop roots

they are commonly found on cereals
they give extra support to plant during flowering stage (structure of prop roots).
Examples of plants with prop roots.

Structure of above roots.

b) Breathing roots
Structure of breathing roots

c) Clasping roots
structure of clasping roots

d) Buttress roots

e) Still roots

Root tubers

These are swollen underground roots with stored food.
Eg Sweet potatoes

- Cassava
- Carrots
- Turnips
- Beetroots

Uses of root to man

1. Some roots are eaten.
2. Some roots are used for making herbal medicine.
3. Some roots are source of income
4. Some roots have nodules which store nitrogen fixing bacteria that adds nitrates in the soil

Uses of roots to plants.

1. They hold the plant firmly in the soil.
2. They suck water and mineral salts from the soil.
3. Some roots are used for breathing.
4. Some roots store food for the plant e.g. cassava, sweet potatoes.

Flowers

A flower is a reproductive part of a flowering plant.

Uses of flowers to plants

- For reproduction.

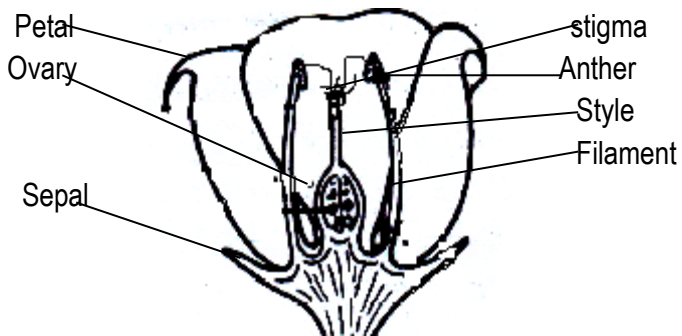
Uses of flowers to people

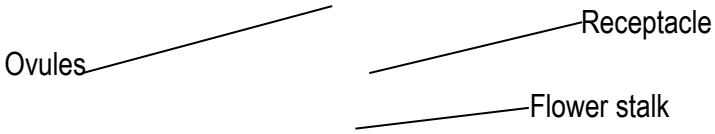
1. For decoration
2. For sale.
3. For making perfume.
4. They are used as wreaths.
5. Some flowers are eaten. e.g. Cauliflower
6. Some are used as a sign of welcome (bouquet)

Uses of flowers to other animals

1. Bees collect nectar and pollen from flowers.
2. Humming birds, sun birds collect nectar from flowers

Structure of a flower.





Importance of each part

Flower stalk:	Holds the flower on the stem.
Sepals:	Protect the flower when it is still young. They make food for the flower. NB: A group of sepals is called calyx.
Anthers:	Produce pollen grains.
Filament:	Hold the anthers.
Stigma:	Receives pollen grains during pollination.
Style:	Holds the stigma up right. Allows pollen tubes to pass through to the ovary.
Petals:	Brightly coloured petals attract pollinators e.g. birds, insects. Note. A group of petals is called "Corolla"
Ovary:	Develops into a fruit after fertilization.
Ovules:	Develops in to seeds after fertilization.
Stamen	Is the male part of a flower

Structure of a stamen

Pistil : Is a female part of a flower

Structure of a pistil

Pollination.

It is the transfer of pollen grains from the anthers to the stigma.

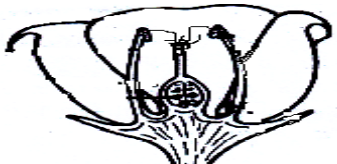
Types of pollination

- Self pollination.
- Cross pollination.

Self pollination

It is the transfer of pollen grains from the anthers to the stigma on the same flower.

Movement of pollen grains.

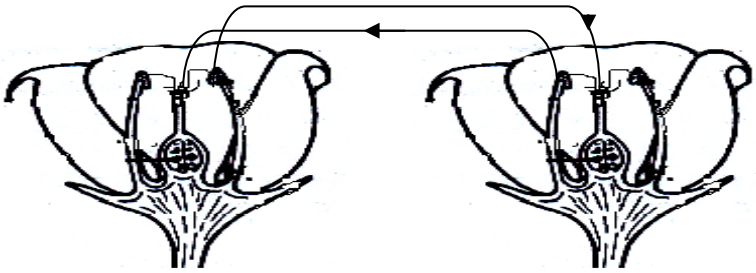


Plants which carry out self pollination.

- Tomatoes
- Wild marigold.

Cross pollination

It is the transfer of pollen grains from the anthers to the stigma of different flowers but of the same kind.
Movement of pollen grains.



Plants which carry out cross pollination

1. Maize
2. Coconut
3. Pawpaw
4. Cow peas
5. Passion fruits

Difference between self pollinated flower and cross pollinated flowers.

Self pollinated	Cross pollinated
• Pistils and stamen on the same flower. • Large amounts of pollen grains produced. • Anthers raised higher than the stigmas.	• Pistils and stamen on different flowers. • Small amounts of pollen grains produced. • Stigmas raised higher than anthers.

Agents of pollination

An agent of pollination is anything that carries pollen grains from the anthers to the stigma.

Examples of agents of pollination.

1. Insects like bees, butterflies, moth, beetles.
2. Birds like sun birds, humming birds.
3. Animals like man.
4. Wind.

Different between wind pollinated flowers and insect pollinated flowers

Insect pollinated flowers	Wind pollinated flowers
• Have brightly coloured petals.	• Have dull coloured petals

• Have large petals. • Produce scent. • Produce nectar. • Produce few pollen grains. • Have sticky stigma • Have heavier pollen grain	• Have small petals. • Produce no scent. • Produce no nectar. • Produce a lot of pollen grains. • Have hairy stigma. • Have lighter pollen grains

Fertilization happens after pollination

Fertilization :

Is the union of a male and a female gametes to form a zygote.

Events after fertilization

- Ovules develop into seeds
- Ovary develops into fruit.

Seeds

A seed is a fertilized ovule

Classes / Types / Groups of seeds

1. Monocotyledonous / monocot seeds
2. Dicotyledonous / Dicot seeds.

Monocotyledonous seeds

These are seeds with one cotyledon

Examples of monocot seeds

- Maize
- Wheat
- Rice
- Millet
- Sorghum

NB: These seeds are also called cereals or grains.

Maize grain (fruit)

- A maize grain is not called a seed but it is called a fruit.
- It is called a fruit because it has two scars.

Scars of a maize grain

1. Style scar
2. Stalk scar

The internal parts of a maize grain / fruit

Functions of each part.

Testa (seed coat): protects the inside parts of the grain.
Radicle: develops into root system.
Plumule: develops into shoot system.
Embryo: grow into a new plant.
Endosperm: It stores food for the embryo.
Cotyledon: It absorbs food from the endosperm to the embryo
Supplies the food for embryo during germination.
Style scar: The part where the style was attached.
Stalk scar : attaches the grain to cob

Dicotyledonous seeds.

These are seeds with two cotyledons.

Examples of dicotyledonous seeds

- Beans
- Peas
- Groundnuts
- Oranges
- Simsim etc

Characteristics of dicotyledonous seeds

1. They have two cotyledons.
2. They have tap root system.
3. They store food in the cotyledon.
4. They have network leaf venation.
5. They undergo epigeal germination.

External parts of a bean seed

Internal parts of a bean seed

Functions of each part:

Cotyledon : Stores food for the embryo.
Testa/ seed coat: Protects the inside parts of a seed.
Radical : Develops into root system.
Plumule : Develops into shoot system.
Scar / hilum : Is where the seed is attached to the pod or fruit.
Micropyle : A hole that allows in air and water into the seed during germination.
Embryo : (Radicle and plumule): Grows in a new plant.
Comparision of cotyledon of a maize grain & a been seed.

Seed germination.

It is the growing of a seed into a seedling.
A seedling is a young plant.

Conditions for germination

1. Water
2. Warmth
3. Oxygen

Importance of each condition.

Water : It softens the testa for the embryo to pass/Dissolving the stored food
Oxygen : It is used for respiration.
Warmth: Provides the right temperature for germination.

Types of germination

1. Epigeal germination
2. Hypogeal germination.

Epigeal germination.

The type of germination where the cotyledon comes out of the ground / soil.
Illustrations to show stages of epigeal germination

Plants which undergo epigeal germination.

1. Beans
2. Soya
3. Peas
4. Groundnuts
5. French beans
6. Simsim.

Hypogeal germination

It is the type of germination where the cotyledon remains in the soil.

Illustrations to show stages of hypogeal germination

Plants with hypogeal germination

1. Maize
2. Wheat
3. Sorghum
4. Millet
5. Oats
6. Barley

Differences between plants and animals

Plants	**Animals**
They have chlorophyll	They donot have chlorophyll
They make their own food	They do not make their own food
They do not move from one place to another	They move freely from one place to another
They respond to stimulus slowly	They respond to stimulus quickly

Importance of plants to man.

- Some plants are used as food
- Some plants are used as herbal medicine
- Plants provide oxygen to man during photosynthesis
- Some plants provide us with building materials
- Some plants are used as mulches.
- Plants are source of manure.

Importance of plants to animals

- Some plants are used as food
- Plants provide oxygen to animals
- Plants are habitat for some animals

How do plants depend on animals

- Plants get carbondioxide from animals
- Plants get manure from animal wastes.

How do animals depend on plants

- Animals get oxygen from plants
- Animals get food from plants
- Some animals use plants as their habitat

How do plants depend on each other.

- Some plants get extra support from others
- Some plants provide shade to others
- Some plants depends on others for nutrients.

Tropism

Tropism is the growth movement of plants in response to the stimulus or Tropism is the plant response towards stimulus.

Types of tropism

Tropism	Stimuli
Phototropism	Light
Geotropism	Gravity force
Hydrotropism	Water / moisture
Thigmotropism / haptotropism	Touch
Chemotropism	Chemicals

Illustration for each tropism

Topical exercise questions

1. How is transpiration important to the environment?
2. State the gas needed during germination.
3. How are flowers important to plants?
4. Maize grains has two scars namely _____ and stalk scar.
5. How is chlorophyll useful during photo synthesis?
6. Draw a maize grain and show the endosperm.
7. Give one example of insect pollinator.
8. Below is a diagram showing away a plant uses for climbing.
   Name it.

9. Which part of a flower attracts pollinators like insects?
10. Name one example a root tuber.
11. What type of leaf venation has a maize plant?
12. Why do some plants climb others?
13. In the space below draw a well labeled stamen.
14. Mention one function of a stem to a plant.
15. Briefly explain the term “seedling”

GROWING CROPS

Crops

A crop is a plant grown for a purpose.

Types of crops

1. Cereals
2. Legumes
3. Root crops
4. Fruit crops
5. Vegetables

Cereals

Cereals are some times called grains or monocots.

Examples of cereals

- Maize
- Millet
- Sorghum

- Rice
- Wheat
- Barley

Leguminous crops (Legumes)

- They have nodules on their roots.
- They have seeds in pods.

Examples of legumes

- Beans
- Peas
- Groundnuts
- Soya beans

Root structure of a leguminous crop

Root nodules:-

- Swellings found on roots of leguminous plants.
- They keep nitrogen fixing bacteria.

NB: Nitrogen fixing bacteria trap nitrogen from air and change in to nitrates as plant food.
These are crops grown purposely for the fruits.

Fruit crops

- Mangoes
- Apples
- Pumpkins
- Pawpaw
- Pine apples.

Root crops (Rood tubers)

- Sweet potatoes
- Cassava
- Carrots

  These are crops which store their food in roots

Vegetables

- Cabbage

- Spinach
- Lettuce
- Dodo
- Nakati
- Bbuga

Types of vegetables

- Leaf vegetables eg cabbages , spinach etc
- Root vegetables eg carrots
- Fruity vegetables eg tomatoes , eggs plants etc.

Groups of crops

1. Annual crops
2. Perennial crops

Annual crops:

These crops grow, produce and die within a year.

Examples:

- Beans
- Maize
- Soya beans
- Millet
- Sorghum
- Rice etc

Perennial crops

These crops grow, produce and die in more than a year.

Examples:-

- Tea
- Coffee
- Cocoa
- Mango
- Banana
- Cotton

Garden tools and their uses

Hoe	• Digging • Planting • Weeding • Harvesting
Spade	• Mixing manure • Lifting soil. • For loading and offloading manure
Rake	• Leveling soil • Collecting weeds.
Wheel barrow	• Carrying soil • Carrying manure • Carrying harvests
Slasher	• Cutting grass • Cutting weeds
Axe	• Cutting big trees • Chopping wood
Panga	• Cutting small branches • Cutting trees. • Harvesting sugar cane
Forked hoe	• Digging hard ground • Digging stony ground
Watering can	• Watering crops • Watering seedling
Trowel	• Transplanting • Carrying seedlings
Garden fork	• Mixing manure
Pick axe	• Digging in rocky ground. • Digging in stony soils.
Secateur	• Pruning crops
Pruner	• Pruning crops
Hand fork	• Light weeding • Removing seedling from soil.
Sprayer	• Spraying crops.

Knives	• Harvesting • Pruning • peeling
Tape measure	• Spacing crops in the garden.
Sickle	• Harvesting cereals

Care for garden tools

- Washing after use and drying them.
- Keep the tools in dry place.
- Painting some of them.
- By oiling them.

Crop growing practices.

1. **Land preparation**
   It is done during dry season to:-
   - Prevent the weeds from germinating again after digging and ploughing.
   - Avoid the soil from sticking on to the hoe or plough.

Ways of preparing land

- Digging
- Ploughing
- Slashing / clearing
- Cutting big trees
- Harrowing
- De – trashing. (Removing tree stumps)

Garden tool / implements used in preparing land

- Hoes
- Ox ploughs
- Tractors
- Slashers
- Rakes
- Panga
- Axe

Importance of preparing land

1. To soften the soil.
2. Digging and ploughing allows water into the soil.
3. It makes planting easy.
4. Allows air in to the soil.
5. Cutting away big trees opens space for crops to get enough sunlight.

6. To remove weeds

2. **Selecting viable planting materials**
   (i) Examples of planting materials.
      1. Seeds
      2. Suckers
      3. Stem cuttings
      4. Rhizomes
      5. bulbs

   (ii) Qualities of good planting materials
      1. They should be mature
      2. They should not be damaged
      3. They should be free from pests.
      4. They should be free from diseases.
      5. They should not be too old.
      6. They should be of the same variety.

   (iii) Importance of selecting planting materials
      1. It prevents wastage of land.
      2. It ensures quality plants.
      3. It prevents wastage of time.
      4. It prevents wastage of labour.

Seed viability : is the ability of a seed to germinate

Planting and sowing

This is putting of planting materials in the soil to germinate.

NB: Planting is done during wet / rainy season.

Reasons for planting crops in wet season.

- There is enough water for seed germination.
- The soil is soft for easy growth of roots.

Methods of planting

1. Planting in rows
2. Broadcasting method.

Row planting

This is when planting materials are put in the soil in lines.

Advantages of row planting

- It makes weeding easy.
- It makes harvesting easy.

- It controls easy spread of pests and diseases.
- It avoids wastage of seeds and other planting materials.
- It allows proper spacing of crops.

Disadvantages of row planting

- It needs a lot of labour.
- It is time consuming.
- It requires large piece of land

Example of plants planted by row planting

- Maize
- Cassava
- Beans
- Pineapple
- Potatoes.

Broad casting method

This is the putting of seeds in the soil while scattering them.

Advantages of broadcasting methods

1. It saves time.
2. It does not need a lot of labour.
3. It does not waste nutrients in soil.

Disadvantages of broadcasting methods

1. It makes weeding difficult.
2. It makes harvesting difficult.
3. Pests and diseases can easily spread.
4. Competition for nutrients and sunlight

Nursery bed.

A nursery bed is a small garden where seedlings are grown before they are transplanted.

Transplanting

This is the transfer of seedlings from a nursery bed to the main garden.

NB:

- Trowel is the garden used during transplanting.
- Transplanting is best done in the evening.

Why transplanting is done in the evening

- It prevents wilting of the seedlings.
- There is little loss of water from the soil through evaporation.

Garden tool used for transplanting.

Examples of plants grown in a nursery bed.

1. Tomatoes
2. Onions
3. Coffee
4. Cabbbages
5. Passion fruits.
6. Cucumber
7. Watermelon
8. Pawpaw

Importance of a nursery bed

1. It gives a farmer time to prepare the main garden.
2. It protects seedlings from heavy rain drops.
3. It protects seedlings from strong sunshine.
4. It helps farmers to select healthy seedlings.
5. It helps water to sink deeply in to the soil.

Advantages of early planting

- Crops make full use of rainfall for the season.
- Cereals mature early therefore get good market.
- Crops grow fast enough and compete with weeds for light nutrients and water before they flow.

Gap filling

The planting of seeds or seedlings where they did not germinate in the garden.

Staking

Provision of extra support for plants with weak stems using sticks .

Caring for crops.

Ways in which farmers care for their crops in the garden

1. Thinning
2. Watering
3. Weeding
4. Manuring
5. Applying fertilizers.
6. Staking
7. Mulching
8. Providing shade.
9. Pruning.

Weeding

This is removal of unwanted plants from the garden.

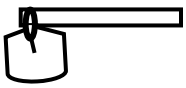
Examples of weeds

1. Spear grass.
2. Elephant grass.
3. Black jack
4. Star grass
5. Wandering Jew
6. Guinea grass
7. Thorn apple

Garden tools for weeding

1. Hand fork

2. Slasher

3. Hoe 

Dangers of weeds in the garden

1. They compete for light, water, nutrients and space with crops.
2. They encourage easy spread of pests.
3. They encourage easy spread of diseases.
4. They make harvesting difficult.

Ways of controlling weeds.

1. Slashing
2. Spraying / using herbicides.
3. Up rooting
4. Crop rotation
5. Mulching
6. Digging.

Advantages of weeding a garden

1. It reduces the competition for light, nutrients, water and space in the garden.
2. It makes harvesting easy.
3. It controls the easy spread of diseases.
4. It prevents the easy spread of crop pests.

Uses of weeds to people.

1. Some weeds are used as herbal medicine.
2. Some weeds are used as mulches.
3. Some weeds are used as animal feeds e.g. elephant grass for cattle.

Manuring

It is the putting of manure in the soil to make it more fertile.

Sources of manure

- Animal dung and urine
- Plant remains
- Green plants.

Types of manure (natural fertilizers)

1. Compost manure: It is got from plant materials and animal wastes.
2. Green manure: It is got from ploughed, buried and rotten green materials like legumes.
3. Farm yard manure (F.Y.M): It is got from farm animal wastes, urine and decayed material.

Mulching

Mulching is the covering of top soil with dry plant materials.

NB: Mulches are plant materials used for mulching.

Examples of mulches

- Elephant grass
- Coffee husks
- Banana leaves
- Chopped stems of bananas.
- Spear grass.

Advantages of mulching

- It keeps water (moisture) in the soil.
- It controls soil erosion.
- It makes the soil fertile.
- It controls the rapid growth of weeds.

Disadvantages of mulching

- Mulching keeps pests.
- Some mulches can grow into weeds.
- Mulching is a fire hazard
- It is tiresome.

Pruning

The cutting of excess leaves or branches from a plant

Advantages of pruning

- It reduces the easy spread of crop diseases.
- It reduces competition for sunlight, water, nutrients and air.
- It improves on crop yields.

Garden tool for pruning

Thinning

It is the removal of excess plants in the garden / nursery bed.

Advantages of thinning

- It reduces competition for crop nutrients.
- It reduces the easy spread of pests.
- It reduces the spread of crop diseases.
- It improves on crop yields.
- It reduce on the weight of a plant

PESTS

A pest is an animal that destroys crops.

Examples of crop pests.

- Army worms
- Birds
- Rats
- Termites
- Maize stalk borer
- Locusts

- Squirrels
- Aphids
- Cotton stainer
- Snails
- Banana weevil
- Maize weevil

Dangers of crop pests.

- They weaken plants.
- They lead to low produce.
- They lead to poor growth of crops.
- They destroy crops.

Ways of controlling crop pests.

- Spraying pesticides.
- Using scare crows
- By crop rotation.
- Planting pest free materials.
- Regular weeding.
- Up rooting and burning infected crops
- Proper spacing.
- Early planting.
- By trapping
- By fencing
- By poisoning
- Early harvesting

Crop diseases

Some crop diseases.

Disease	**Plant attacked**
Cassava mosaic Leaf rot	Cassava plant
Tomato blight	Tomatoes
Ground nut Rosette	Groundnuts
Leaf spot Maize streak	Maize
Powderly mildew	Mangoes, pawpaws, turnips
Smuts	Sugarcane, maize, sorghum
Rust	Cereals (millet, maize, barley, wheat)

Panama	Banana

Ways of controlling crop diseases

- By crop rotation.
- Spraying chemicals.
- Uprooting and burning of infected crops.
- Planting healthy materials.
- Proper spacing
- Early planting.

Crop rotation

It is the growing of different types of crops on the same piece of land seasonally.

Advantages of crop rotation

- Keeps the soil fertile.
- Controls soil erosion.
- Controls crop pests.
- Controls crop diseases.

NB:

1. Legumes are alternated with non – leguminous plants.
   Why: They make soil more fertile since legumes add nutrients to the soil.
2. Shallow rooters are alternated with deep rooters.
   Why? This balances the use of nutrients from soil at different levels.
   Watering : Is the supply of water to crops

Uses of water in soil

- It makes the soil soft for roots to grow easily.
- It is used for seed germination.
- Plants use water to make food.
- It softens the ground for easy weeding.
- Cools the plants during transpiration.

Harvesting

This is collecting of ready (mature) crops from the garden.

- It is done during the dry season to dry harvests.

Some garden tools for harvesting

Tool	Purpose

Sickle	Harvesting cereal crops
Hoe	Harvesting root crops.
Panga	Harvesting sugarcane, banana.

Methods of harvesting

1. Hand picking (e.g coffee, oranges etc)
2. Cutting stems (e.g. sugarcane, banana)
3. Up rooting (e.g. groundnuts, cassava)
4. Digging (e.g. potatoes).

Storing of food

Keeping of food safely for future use.

Reasons why farmers store food.

1. To be eaten in dry season.
2. For planting in next season.
3. To be sold when market prices are better.

Places where food can be stored

1. In granaries
2. Silos
3. In refrigerators / freezers

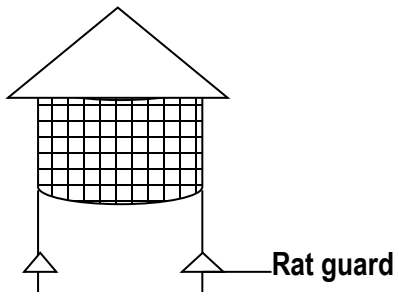
Types of stores

- Traditional stores eg granaries
- Modern stores eg. silos

Qualities of a good store

- It should be well ventilated.
- The roof should be leak proof.
- It should have rat guards.
- It should be clean and dry.

A diagram showing a granary.



NB:

1. Rat guard prevents rats from entering the store.
2. Leak proof roof prevents damping and rotting of the seeds.

Some storage pests

- Rats
- Maize weevil
- Bean weevil
- A storage beetle.
- Harvest mite

Food preservation

Is the preventing food from going bad.

Methods of preserving food (modern / local)

Method	Example of food
Sun drying	Cassava, sweet potatoes, maize, Irish potatoes, Onions, millet, rice, sun flower, wheat, beans, soya beans, peas, mushroom
Freezing	Oranges, mangoes, avocados, sweet banana, Irish potatoes, cucumber, cabbage, water melon.
Tinning / canning	Beans, Tomatoes
Salting	Meat / fish
Smoking	Meat + fish
Refrigeration	All fruits / vegetation / meat / fish
Roasting	Meat / fish

Food path

Food path are different stages in food production.

Type of food path

- Village food path
- Town foodpath
- Earning food path

Village food path: This is the food path where farmers grow crops for home consumption

Stages of village food path

- Land preparation (clearing the land)
- Planting
- Caring for crops
- Harvesting

Town food path : This is the food path where farmers good or produce food for sale.

Stages in town food path.

- Clearing the land

- Planting
- Caring for crops
- Harvesting
- Drying seeds
- Marketing
- Buying and cooking food
- Eating

Earning food path

This is the food path where people who work and get salary use it to buy food in markets

Stages of earning food path

- Getting salary
- Budgeting
- Buying food

Blocks of food path

Blocks of food path are problems faced in food production and may lead to little yield when harvested.

Examples of blocks of food path

- Crop pests
- Crops diseases
- Poor farming methods
- Poor health (elnino , drought)
- Earth quake

TOPICAL QUESTIONS

1. What do we call plants with root nodules?
2. Mention one example of a root tuber.
3. In the space below draw a garden tool for transplanting.
4. Give one example of a crop grown in a nursery bed.
5. Which season is best for harvesting?
6. Define crop rotation.
7. Apart from broadcasting methods of planting, name the other method.
8. Suggest one use of weed to people.
9. Write F.Y.M in full.
10. Give one disease that attacks tomatoes in the garden.
11. (a) What is harvesting?
    (b) Mention two tools for harvesting.
    (c) Suggest one method of harvesting.

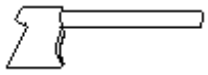
12. (i) Give the meaning of the word pest!
    (ii) Name two storage pests you know.
    (iii) State one danger of pests to crops.

13. (a) Write two qualities of good planting materials.
    (b) Mention one example of planting materials.

(c) Suggest one importance of early planting.

14. (a) Give two ways of preserving food.
(b) Why are rat guards put on the granary.
(c) List one place where food can be stored.

15. (a) Which term is used for covering of top soil with dry plant materials?
(b) Write three examples of mulches.

16. Name the garden tools below:-
(i) 
(ii)

WEATHER CHANGES AROUND US

WEATHER

Weather is the condition of the atmosphere at a given time.

Note: The average weather condition of a place recorded for along period of time is called **climate**

Types / states / conditions of weather

- Rainy
- Sunny
- Cloudy
- Windy

Weather chart

Elements of weather (factors / weather makers / aspects of weather

Rainfall	-	Humidity	-	Air pressure
Sunshine	-	Temperature	-	
Cloud cover	-	Wind		

The measuring units of rainfall are millmetres (mm)

Rain fall

- Rain is water falling in separate drops from clouds.
- Rainfall is the amount of rainwater that falls in a certain area at a certain time.

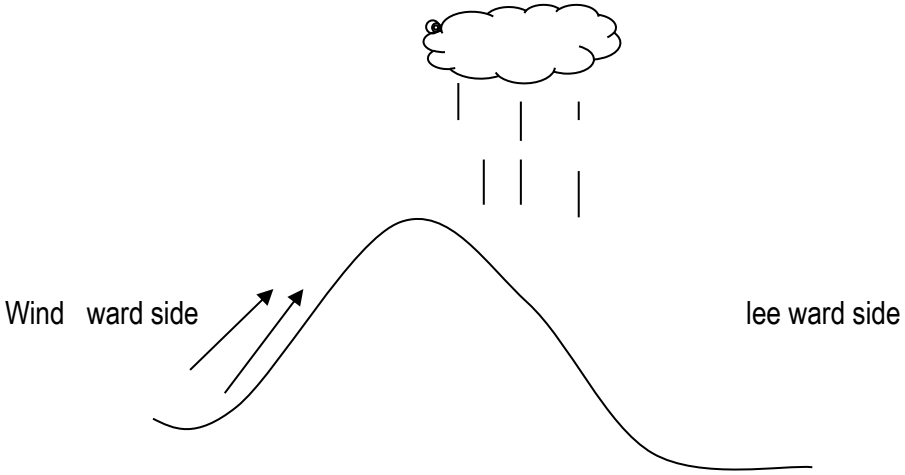
Types of rainfall

There are three types of rainfall namely:-

1. Relief rainfall
2. Convectional rainfall
3. Cyclonic rainfall.

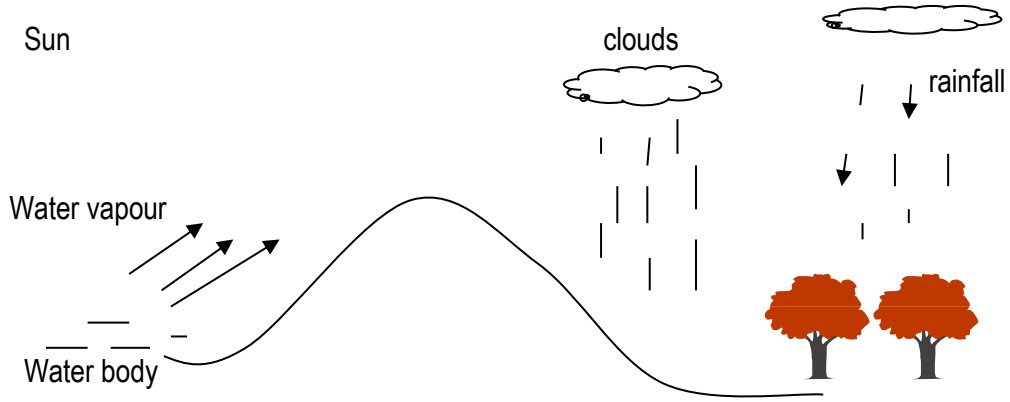
Relief rainfall

This is a type of rainfall received around mountainous and hilly places.
It is also known as aerographic rainfall.



Convectional rainfall:-
This is the type of rainfall received on land and places near water bodies.
It is formed in the same way as the water cycle.

A diagram to illustrate a water cycle.



Experiment to show a water cycle (diagram)

Things to use

- Kettle
- Source of heat
- Water
- Cold container

Comparision of the experiment to the rain cycle: Kettle-water body, fire-sun

Note:

Water cycle is a process by which rain is formed.

The water cycle involves the following process:

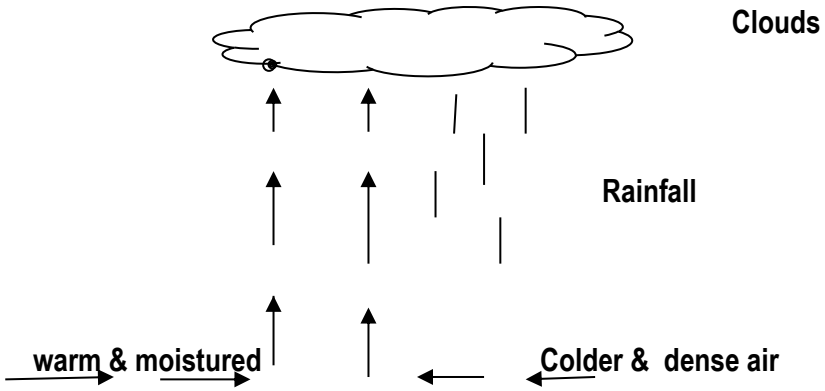
(a) **Evaporation:**
This is a process by which water changes to vapour.

(b) Transpiration:
This is the process by which plants lose water to the atmosphere in form of water vapour through the stomata.

(c) **Condensation:**
This is the process by which vapour changes to water.

Cyclonic rainfall:

This type of rainfall is received as a result of warm air meeting cold air in a certain place.



Note:

1. Rainfall is measured by an instrument called **rain gauge.**

2. Rainfall is measured in **millimeters.**

3. The rain gauge must be placed in an open place where rain is not destructed in order to get the correct amount of rainfall received.

4. The rain gauge should raised 30cm above the ground to prevent running water from entering the measuring cylinder.

A diagram of a rain gauge.

Uses of rainfall (advantages)

- Rainfall provides water for domestic use, industrial use, etc.
- Rainfall waters plants.
- It helps farmers crops to grow quickly and have good yield.
- It cools down the temperature in the atmosphere.
- It also softens the soil for easy cultivation.
- It increases the volume of water in water bodies for easy generation of hydro electricity power.

Disadvantages (dangers) of too much / heavy rainfall

- Too much rainfall cause floods.
- A lot of rainfall causes delay in transport.
- A lot of rainfall causes very cold temperature.
- Brings difficulty in constructing roads, houses etc.
- Too much rainfall can spoil crops and buildings.
- It also kills people.

SUNSHINE

Sunshine is measured by an instrument called sunshine recorder.

Diagram of a sunshine recorder

Note:

- Sun is the main natural source of heat and energy.
- It provides us with vitamin D with the help of the skin.

Advantages / uses / importance of sunshine

- It helps in rain formation.
- It dries harvested crops.
- It helps plants to make their own food.
- Helps our skin to make vitamin D.
- It kills some germs.
- It dries wet clothes

Disadvantages / dangers of too much sunshine

- It makes it very hot.
- Too much sunshine makes the soil hard for cultivation.
- It dries water sources.
- It kills animals and plants.

Clouds

Clouds are grouped according to their heights and general shape.

Types of clouds

(a) **Circus clouds**
- They look like feathers in the sky.
- They are the furthest in the sky at a height of 800m to 16000m above the ground.

(b) **Cumulus clouds**
- They are white clouds which resemble cotton piles with a flat bottom.
- They can develop into thunder and thus they may indicate rain.

(c) **Stratus clouds:**
- They are nearer the earth than the cumulus.
- They are a sign of fair weather.

(d) **Nimbus clouds**:
- They are clouds that bring us rain or give us rain.
- They are nearest to the earth.
- They are dark grey in colour.

HUMUDITY:

- This is the amount of water vapour in the atmosphere.
- When there is a lot of water vapour in the air, the weather is said to be humid.
- Humidity is measured by an instrument called **hygrometer** or a wet and dry bulb.

Diagram

TEMPERATURE:

- This is the degree hotness or coldness of a body or a place.
- The instrument used to measure temperature is called a **thermometer.**
- A thermometer is read in two scales namely:-
  * Degrees Celsius / centigrade
  * Degrees Fahrenheit.

  Temperature is measured in degrees

Types of thermometers

- Clinical thermometer
- Minimum and maximum thermometer.
- Scientific / clinical thermometer
- Wall thermometer

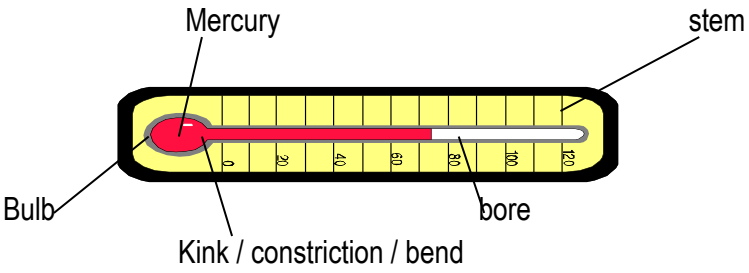
1. **Clinical thermometer**

- It is used in hospitals by doctors, nurses, etc to measure the human body temperature.
- The temperature of a human body must remain constant at 37^0C or 98.4^0F except when the person is sick or has fever.
- The clinical thermometer is placed in the following places:-
    * In the mouth under the tongue to prevent biting and breaking the bulb.
    * In the arm pit.
    * In the anus
    * In the vagina.

NB: These parts maintain the temperature.

Function of each part

Diagram of a clinical thermometer



Minimum and maximum thermometer

- It is sometimes called the six's thermometer because it was first made by James six.
- The minimum and maximum thermometer is used to measure the lowest and highest temperature of the day.
- It uses both alcohol and mercury.

Diagram

Note:

1. In a weather station, we find the Stevenson screen where delicate weather instrument are kept.
2. A Stevenson screen is painted white to reflect heat.

Diagram of a Stevenson screen

WIND

- Wind is moving air / Air in motion.
- The instrument used to measure the direction of wind is called a **wind vane / wind cock.** The arrow of the wind vane points in the direction from which wind is blowing.

Other wind instruments

- **A wind sock** shows the direction and measures strength of wind but it points in the direction in which wind is blowing.
- **Anemometer** measures the speed of wind.

Diagram of wing instruments

Advantages of wind:-

- Wind helps to bring cold air in warm places.
- Wind helps in pollination of plants.
- Wind helps farmers to remove husks from their seeds (used in winnowing)
- Wind helps in the formation of rainfall.
- Wind dries wet things e.g. paint, clothes, etc.
- Wind helps to generate electricity by running wind mills for sailing boats.

Disadvantages of wind

- Wind can spread diseases like tuberculosis.
- Wind can take away top soil (causes soil erosion)
- Strong wind throws down houses, buildings and trees.
- Wind causes storms on land, lakes, seas, oceans and become a transport problem.
- Destroys crops

ATMOSPHERIC PRESSURE

- This is the force exerted by air in the atmosphere.
- It is caused by the movement of wind or air from one place to another.
- Atmospheric pressure is measured by an instrument called a barometer.

Diagram of a barometer.

PERSONAL HYGIENE

- Personal hygiene is the keeping of our bodies clean.
- It is also the general cleanliness of our bodies.

Ways of keeping our bodies clean (How to keep our bodies clean)

- Bathing regularly.
- Cutting finger and toe nails short.
- Brushing teeth everyday.
- Washing hands after visiting the toilet or latrine.
- Washing hands after a physical task like digging picking rubbish etc.
- Washing hands before eating or touching food.
- Washing clothes regularly.
- Washing beddings regularly
- Combing hair daily.
- Ironing clothes and bedding.

Items or things used in keeping our bodies clean

- Water (clean)	- bathing sponge	- Towel
- Tooth paste	- soap	- Nail cutters / razor blade
- Tooth brush	- comb	- Dental floss
- Teeth picks		- Ear buds

How to keep things / items at home clean.

1. Beddings and clothings:
   - Washing them
   - Ironing
   - spreading under the sunshine
   - Spraying with insecticides

Diseases that result from poor personal hygiene

- Scabies
- Ringworm
- Impetigo

Importance of keeping our bodies clean

- It controls the spread of germs.
- It prevents bad body smell.
- It prevents skin diseases.
- It prevents teeth diseases.
- It prevents lice, mites and ticks.
- To remove dirt.
- To be smart.

END OF TOPIC QUESTIONS

1. What do you understand by personal hygiene?
2. State any two ways of keeping our bodies clean.

3. Identify any two items used in keeping our bodies clean.
4. Why is brushing our teeth regularly important to our bodies?
   (i) _____
   (ii) _____
5. Suggest two reasons why people iron their clothings and bedding.
   (i) _____
   (ii) _____
6. Why do we wash our hands with soap and clean water after latrines or toilets?
7. Why do we cut our finger and toe nails short?
8. Raymond, a pupil in P.4 ate an un washed mango in the morning. Identify any two diseases he is likely to face.
9. How do we keep the following items at home clean?
   (a) Beddings
      (i) _____
      (ii) _____
   (b) Clothings:
      (i) _____
      (ii) _____
10. Why is keeping our bodies clean important? Give three reasons.

SCIENCE LESSON NOTES FOR P.4 TERM II

OUR FOOD

Food is anything good to eat or drink
Feeding is the taking in of food.
Nutrition is the process by which food is taken in and used by the body.

Uses of food to the body

(i) Food provides energy to the body.
(ii) Food keeps the body healthy.
(iii) Food builds the body.
(iv) Food provides warmth to the body.

Why we eat food

We eat food everyday for the following reasons 5Hs

- To satisfy Hunger
- To be healthy.
- Because it is a habit.
- Because of hospitality.
- Because of happiness.

NB: The above reasons are known as the 5Hs, i.e .

(i) Hunger (because our stomachs are empty.
(ii) Health.(because we need to live)
(iii) Habit (it is time of the day when we normally go out).
(iv) Happiness. (because we enjoy eating certain foods)
(v) Hospitality (because we have guests and its our custom to offer them food)

Ways people get food

- By growing it in the garden.
- By buying it from shops, markets, supermarkets etc.
- By fishing from lakes, swamps, rivers etc.
- By hunting.
- By gathering from forests and bushes.

Places where people get food (source of food)

(i) From shops
(ii) From the garden
(iii) From the supermarkets
(iv) From markets

(v) From lakes, rivers swamps etc.

(vi) From forests

BALANCED DIET

Balanced diet is a meal containing all food values in their right amounts.

What makes up a balanced diet?

A balanced diet is made up of (3) three main classes of food.

Food values

- Proteins
- Carbohydrates
- Fats and oils
- Water and mineral salts
- Vitamins
- Roughages

Others include: the food values.

- Fats and oils
- Proteins
- Carbohydrates
- Water and mineral salts
- Vitamins
- Roughages

PROTEINS

These are body building foods.

Uses:

- Proteins helps in making new body cells.
- Proteins help in replacement of worn out tissues / body cells

Sources of proteins

(a) **Animal proteins**

- Beef
- Chicken
- Fish
- Eggs
- Grasshoppers
- White ants
- Pork.

(b) **Plant proteins**

- Beans
- Soya beans
- Ground nuts
- Peas

CARBOHYDRATES

These are food values that give us energy

Sources of carbohydrates

(i) Maize
(ii) Millet
(iii) Cassava
(iv) Rice
(v) Sorghum
(vi) Sweet potatoes
(vii) Irish potatoes
(viii) Coco yams
(ix) Matooke
(x) Sugar cane
(xi) Bread
(xii) Posho
(xiii) Honey

VITAMINS

These are health giving foods

Types of vitamins

- Vitamin A
- Vitamin B_1
- Vitamin B_2
- Vitamin C
- Vitamin D

Uses of vitamins

Vitamin	Source	Importance	Deficiency disease	Sign / Symptoms

A	(i) Liver • Cheese • Butter • Margarine • Milk • Eggs • Spinach • Carrots • Carrots • mango (ii) Palm oil	(i) Increases resistance to diseases (ii) For good night vision	• Poor night vision (Night blindness)	(i) Blurred objects (ii) Poor eye sight (iii) Reduced night vision
B_1	• Unpolished cercal. • Beans • Ground nuts • Green leafy vegetables • Meat • Yeast	• For mental health • For proper growth	• Beriberi	• Poor growth • Paralysis • Forgetfulness • Lack of appetite • Body weakness.
B_2	• Beans • Lean meat • Liver • Yeast • Kidney • groundnuts	• For mental growth. • For proper growth	• Pellagra	• Body weakness • Poor growth
C	• All fruits and vegetables • Oranges • Lemons • Guavas • Tomatoes • Mangoes • Pawpaw • Fresh green vegetables	• For strong skin membrane.	• Scurvy	• Bleeding of the gums. • Poor healing of wounds. • Reduced resistance to diseases. • Poor growth of skin.
D.	• Butter • Milk • Cheese	• For absorption of calcium. • For strong bones	• Rickets	• Weak bones. • Curved

	• Egg yolk • Liver • Fish liver oil	and teeth.		

FATS AND OILS

Use:

They use energy giving food so provide energy and heat.

Sources of fats and oils

- Milk
- Butter
- Cheese
- Egg yolk
- Ground nuts
- Margarine
- Meat

Dangers of having little fats in the body.

- Lack of energy
- Thinners
- Rough and dry skin
- Feeling cold all the time.

Note: Fats are solids while oils are liquids at room temperature.

MINERAL SALTS

Use:

They are health giving foods so keep us health.

Types of Mineral salts

- Iron
- Calcium
- Phosphorus
- Iodine
- Sodium
- Potassium

- Magnesium
- Fluoride

IRON

Use:

For making red blood cells.

Formation of haemoglobin

Sources of iron

- Meat
- Liver
- Calcium
- Milk
- millet
- Green vegetables e.g. spinach
- Beans

NB: Phosphorus, magnesium also strengthen bones and teeth.

IODINE

Use:

For proper functioning / working of the thyroid gland.

Sources of iodine

- Sea fish / sea foods
- Iodized salt.

Calcium

Use

For strong bones and teeth

Sources

Dry fish , milk , eggs , grains , milk products

Sodium chloride

Use

To maintain fluid balance in the body.

Source

Salt , smoked sea fish s, meat

Fluoride

Use

- Protects the tooth enamel against decay
- Strong teeth formation
- Source
- Tooth paste
- Fluoridated water

Water

It makes 70% of the human body.

Food sources of water.

Water	tea
Juice	milk
Soda	safi
Cocoa	soup

Uses of water in the body

- It makes digestion and absorption of food easy
- It forms the basic of blood plasma
- It reduces body temperature by sweating
- It quenches thirst
- It helps to remove waste products from the body

Roughages

Roughages are the indigestible fibres from the cell walls of plants

Sources

- Green leafy vegetables
- Bread
- Seeds
- Fresh fruit
- Un polished cereals
- Processed foods

Importance of roughages in the body.

- They prevent constipation
- They reduce the risk of bowel cancer
- They allow easy digestion of food.
- They add bulk to the diet

- Allow easy movement of food through the alimentary canal

DEFICIENCY DISEASES

Diseases caused by lack of certain food values in the body.

1. **Kwashiorkor**
   (a) It is caused by lack of enough proteins in the diet.
   (b) Signs of kwashiorkor
      - Swollen belly / pot belly
      - Swollen moon face
      - Swollen feet and hands.
      - Skin rash.
      - little brown hair.

   Prevention of Kwashiorkor
   - Eat foods rich in proteins.

2. **Marasmus**
   (a) It is caused by lack of enough carbohydrates in the diet.
   (b) Signs of marasmus
      - Old man's face
      - Thin body
      - Always hungry
      - General body weakness.
      - Loss of body weight

   Prevention of marasmus
   - Eat foods rich in carbohydrates.

3. **Anaemia**
   - It is caused by lack of enough iron in the diet.
   - It is prevented by eating foods rich in iron like liver, eggs, cereals, kidney, etc.

4. GOITRE

- It is caused by lack of enough iodine in the diet.
- It is prevented by eating food rich in iodine like the sea foods and iodized salt.

5. Night blindness
6. Beriberi

7. Scurvy
8. Rickets

Vulnerable groups of people

These are groups of people that are easily affected by lack of proper feeding

These are groups of people that need special care in terms of feeding.

Examples s of vulnerable

- Pregnant mothers
- Sick people
- Weaning babies
- Elderly people
- Breastfeeding mothers

Breast feeding

It is the act of feeding baby on breast milk.

Importance of breast milk to a baby

- It is easy to digest
- It contains all food values needed by the baby
- Breast milk contains antibodies which protects the baby against diseases
- It is at the right body temperature
- It is clean.

Importance of breast feeding to a mother

- It saves her time
- It is cheap
- It create love bond between the mother and the baby
- It delays the next pregnancy

Malnutrition

- It is a condition when the body does not receive enough food nutrients.
- Signs / symptoms of malnutrition - tireless , loss of body weight , dullness

Signs of Goitre

- Swelling in the neck.

FOOD HYGIENE

Food hygiene is the keeping of food free from germs.

Proper handling of food

- Washing hands before preparing food.

- Wash hands before serving food.
- Wash fruits and vegetables before eating them.
- Prepare food in a clean place.
- Serve food in clean containers

Importance of proper handling of food.

- It prevents food contamination.
- It preserves food for future use.
- Controls the spread of some diseases
- Protects food from vectors

Ways food gets contaminated

- Serving food with dirty hands.
- Serving food in dirty utensils.
- By some disease vectors e.g. crockroaches and houseflies.
- Preparing food in dirty environment.
- By dust falling on covered food.

Dangers of poor handling of food.

- It spreads germs
- It causes the food to go bad.
- It may cause food poisoning.

Good eating habits

- Wash hands before eating food.
- Sit upright when eating food.
- Swallowing food after chewing it properly.
- Chewing food with mouth closed.
- Putting small lumps of food in the mouth at a time.

Bad eating habits

- Eating with unwashed hands
- Eating while walking
- Swallowing food before chewing it properly
- Talking when the mouth is full of food

Dangers of bad eating habits

- Eating food with unwashed hands contaminates food and may lead to diarrhea.
- Bending while eating food interferes with movement of food in the alimentary canal.
- Swallowing food before chewing properly can lead to indigestion it can also lead to choking.
- Talking when food is in the mouth leads to spitting food on other people near you.

FOOD PRESERVATION

Is the keeping of food for along time without getting / going bad.

Ways of preserving food.

- Sun drying e.g. cassava, beans.
- Salting e.g. meat.
- Smoking e.g. fish.
- Tinning / bottling / canning. Eg beef , fish , milk
- Freezing e.g. milk. Eg milk
- Refrigerating e.g. oranges, green vegetables, milk.
- Roasting e.g. meat.
- Boiling and heating.

FOOD SECURITY

This is when a family / community has enough food for eating all year round.

Food security can be achieved through.

- Growing enough food crops
- Proper food storage
- Preservation of food.
- Practicing proper farming methods.
- Improving soil fertility

Importance of food security

- The family has enough food to eat throughout the year.
- It prevents deficiency diseases in the family.

Preparation of simple dishes

Using local methods

- Matooke - steaming , boiling , roasting

- Millet bread – mingling
- Sweet potatoes – steaming , roasting
- Rice – boiling , steaming
- Maize bread (posho) – mingling

MAJOR BODY ORGANS

- An organ is a group of tissues that perform the same function.
- A tissue is a group of body cells.
- A cell is the smallest unit of the body

Examples of major body organs

Eyes	Brain	Lungs	Tongue
Ears	Stomach	Liver	kidneys
Nose	Heart	Bladder	skin

- Structure / diagram showing location of the major organs.
- Structure of each organ, function, diseases and disorders, care.

1. **Eyes:**

- Eyes are found on the head.
- They are protected by the eye sockets in the skull.
- People have a pair of eyes.

Function: Eyes are used for seeing / sight / vision.

Functions of each part.

- Iris – controls the amount of light entering the eye.
- Pupil - allows light inside the eye

Disorders

- Squints
- Blindness
- Short sightedness
- Long sightedness
- Astigmatism

Diseases of eyes.

(i) Trachoma
(ii) River blindness
(iii) Conjunctivitis (Pink eye / red eyes)
(iv) Night blindness.

Care for the eyes

- Wash eyes with clean water and soap regularly.
- Avoid looking at bright light directly.
- Do not strain your eyes by reading in dim light.
- Do not hold book too close or far when reading.
- Visit eye clinic for regular check up and tests. - (Oculist optician)

2. **Ears**
    - Ears are found on the head.
    - People have two ears on the head.
    - Ears are sense organs for hearing.
    - The outer ear (pinna) is used for collecting sound waves.
    - The ear also helps in body balance.

Structure of the ear

NB: There is wax in the auditory canal to trap dust and other foreign bodies.

Function of each part

Pinna – it collects sound waves
Auditory canal – directs sound waves to the eardrum
Eardrum – produces sound vibration

Diseases of the ear

- Ear cancer
- Otitis media
- Meniere's diseases

Disorders of the ear

- Partial deafness
- Permanent deafness
- Foreign bodies (these prevent sound waves from reaching the ear drum).
- Rapture (tear) of the ear drum

Care for ears

- Wash the ears daily and keep them dry.
- Do not push objects into the ears.
- Do not use sharp objects for cleaning your ears.
- Do not direct your ear to loud sound.

3. **The Nose**
   - It is located at the front of the face.
   - It has two nostrils used for taking air into and out of the body (lungs).
   - The nose is the sense organ for smelling.

Front view of the nose

The nose has hairs (cilia) and that traps any foreign bodies like dust, dirt. Or Cilia filters air before it goes to the lungs.

Diseases of the nose

- Influenza (flue)
- **Disorders** – having a foreign object in the nose
- Nose bleeding

Care of the nose

Regular cleaning

Covering the nose in dusty

2. The Brain

- This is the most important organ of the body.
- The brain is found in the head.
- It is protected by the skull.

Diagram shows the position of the brain

Uses of the brain

(i) For thinking.
(ii) For recall / remembering.
(iii) For body balance.
(iv) For storing information.
(v) For learning / reasoning.

Diseases of the brain

Epilepsy, cerebral malaria, meningitis etc.

Care for the brain

(i) Having enough rest.
(ii) Avoid drugs like alcohol, marijuana, tobacco.
(iii) Eat a balanced diet.
(iv) Having physical exercises to refresh the brain daily.
(v) Early treatment of malaria.

3. The stomach

Diagram of the stomach

- It is located in the abdomen.
- The stomach is part of the digestive system.
- It is bag like and elastic.

Uses of the stomach

- The stomach stores food for sometime.
- It digests food (proteins)
- It produces an acid (hydrochloric acid) which kills germs in the food eaten.
- It produces gastric juice

Diseases of the stomach

Peptic ulcers, Diarrhoea, Dysentery, Cholera, etc

Disorders of the stomach

Constipation, indigestion, vomiting, Diarrhea, etc

Care for the stomach

- Avoid drinking alcohol as it causes wounds on the stomach lining.
- Drink a lot of water to prevent constipation.
- Eat a balanced diet.
- Avoid smoking as this makes ulcers worse.
- Avoid prolonged hunger as it causes ulcers.
- Doing physical exercises.

4. **Lungs**
   - Lungs are found in the chest.
   - They are protected by the rib cage.
   - People have two lungs.

   Diagram showing the lungs

Uses of lungs

- Lungs are used for breathing / respiration .
- They pass out carbondioxide and excess water vapour. (excretion)

Diseases of lungs

Tuberculosis, Diphtheria, whooping cough (pertussis), Pneumonia, influenza (flue), Bronchitis, lungcancer, Emphysema, Asthma, etc.

Care for the lungs

- Avoid tobacco smoking.
- Avoid dusty places.
- Avoid crowded places.
- Take infants for immunization against TB, whooping cough and diphtheria.
- Do regular physical exercises.
- Isolate people with tuberculosis.
- feeding on a balanced diet

5. **The liver**

   It is located in the upper part of the abdomen.

Structure of the liver.

The gall bladder stores bile.

Uses of the liver

- The liver regulates body sugar.
- It produces bile.
- It stores iron, glycogen and vitamin A and D.
- It dilutes poisonous substances from blood.
- It produces body heat

Diseases of the liver

- Hepatitis, liver cancer, cirrhosis (liver disease)

Care for the liver

- Avoid drinking too much alcohol (it causes cirrhosis).
- Have a balanced diet.
- Boil water for drinking to avoid hepatitis.

6. **The Heart**
   - The heart is found in the chest cavity.
   - It is protected from physical damage by the ribcage.
   - A person has one heart.

Use:

The heart pumps blood to all parts of the body.

Structure of the heart

The heart is made up of a tough muscle called **Cardiac muscle.**

Diseases of the heart

- Hypertension (High blood pressure)
- Heart attack (coronary thrombosis)
- Low blood pressure
- Heart failure

Care for the heart

- Doing regular physical exercises.
- Eating a balanced diet.
- Avoid smoking to avoid blood clots in the coronary artery.
- Having regular medical check up

7. **Kidneys and the urinary bladder**

The kidneys and urinary bladder are found in the lower abdomen

Uses

(a) Kidney

- It filters blood (it removes urea excess water and mineral salts from blood.)

(b) Urinary bladder

- It stores urine before it is passed out.

(c) Ureter

- Carries urine from kidneys to the urinary bladder.

(d) Urethra

- Passes urine out of the urinary bladder

Care for the kidney and urinary bladder

- Avoid drinking alcohol.
- Do not hold urine for a long time in the bladder.
- Drink plenty of water.
- Drinking clean boiled water

Diseases of the kidney / urinary bladder.

- Kidney failure, kidney stones, Bilharzia

8. The Tongue

- It is found in the mouth.

Uses

- It is a sense organ for tasting.
- It rolls food into a bolus and pushes it to the gullet for swallowing.
- It is used in talking

Disorders of the tongue

Burns, cuts, blisters, bites , loss of tasting

Care for the tongue

- Do not eat hot food. This may damage the taste buds.
- Do not put sharp objects in the mouth.
- Avoid too much smoking

9. The skin

This is the largest organ of the body found outside the body.

Uses of the skin

- It removes sweat from the body.
- It regulates body temperature (i.e. through sweating and growth of goose pimples when it is hot and cold respectively).
- The skin prevents germs from entering our bodies.
- It protects our muscles from damage.

- It is a sense organ for feeling

Diseases and disorders of the skin.

Diseases	Disorders
Leprosy	Cuts
Ringworm	Blisters
Scabies	Skin rash
Boils	Pimples (acne)
Eczema	Dryness / cracks
Impetigo	

Care for the skin.

- Bathing regularly using clean water and soap.
- Apply Vaseline to keep the skin soft.
- Do not share under wears, towels, combs with infected people.
- Feeding on the foods that contain vitamin C

TOPICAL REVISION QUESTIONS – BODY ORGANS

1. Name any four major organs in our bodies.
2. Identify the sense organs for;-
   (a) Hearing
   (b) Tasting
   (c) Sight / Vision / Seeing
   (d) Touch / Feeling
   (e) Smelling.
3. Nose is to man as …….. is to cockroaches.
4. Write any one cause of deafness.
5. How useful are the hairs found in the nose?
6. Study the diagram of the ear below and answer the questions about it.

   (a) Name part x on the human ear.
   (b) How useful is the wax found in part S?
7. Mention one disease which attacks our eyes.
8. What good health practice should be carried every morning to keep our eyes clean?
9. Mention one way of keeping the skin healthy.

10. Which organ is called the “pump of the body”.
11. In which part of the body is the brain protected?
12. State two functions of the brain.
13. Why is it important to take a rest?
14. How many pairs of lungs does man have?
15. Name part S on the diagram of lungs below:-

16. Mention one immunisable disease which attacks the lungs.
17. Why are physical exercises good to our bodies?
18. Which body organ produces bile?
19. Draw a diagram showing the stomach.
20. How can we keep the stomach in proper health?
21. Which body organ removes wastes from blood?
22. Why is it bad to hold urine in the urinary bladder for a long time?
23. Name one organ found in the
    (a) Head
    (b) Chest cavity.
    (c) Abdomen

HUMAN TEETH

A tooth is a hard bone like structure in vertebrates used for breaking food into smaller pieces.

Sets of Teeth

(i) Milk teeth (Deciduous teeth) / primary set
(ii) Permanent teeth / secondary set

Milk teeth

They are 20 in number and the first to grow in young children. Milk teeth start growing from the age of 6 months and at the age of around 7 years.
These teeth begin to fall out and are replaced by the permanent teeth.

Permanent teeth

This is the second and final set of teeth in the mammals growth.
A person starts developing permanent teeth at 13 years.
An adult normal person has 32 permanent teeth consisting of incisors, canines, premolars and molars.

Types of teeth

- Incisors
- Canines
- Premolars
- Molars.

Incisors:

They are used for cutting and biting food.
They are chisel shaped.
They are the first teeth to grow.

Diagram of an incisor.

Canines

They are used for tearing food.
Canines are sharp and pointed.
Diagram of a canine

Premolars

Premolars are used for grinding, chewing and crushing food.
They are broad, blunt and flat ridged.
Diagram of a premolar.

Molars

Molars are used for grinding chewing and crushing food.
They are broad, blunt and flat ridged.

Diagram of a Molar (both upper and lower jaws)

Dental formula : Is the number and types of teeth a person has

Is the arrangement of teeth in the **j**aws**.**

	Incisors	Canines	Premolars	Total	Molars
Lower Jaw	4	2	4	16	6
Upper Jaw	4	2	4	16	6
Total	8	4	8	32	12

Definition : Is the arrangement of teeth in jaws

REGIONS OF A TOOTH

Illustration

1. Crown
2. Root
3. Neck

Parts of a tooth (canine and molar)

- Enamel
- Dentine
- Pulp cavity
- Blood capillaries / vessels / sensory nerves
- Gum
- Cement
- Jaw

Functions of parts of the tooth

Enamel:

- The hardest part of the tooth.
- It is the hardest substance in the body made of calcium of phosphorus.

- Enamel prevents wear and tear of the tooth.
- It protects the inner parts

Dentine:

- It keeps replacing the enamel as it may wear off due to friction.

Pulp cavity

- It is the most sensitive part of the tooth.
- It contains blood vessels and sensory nerves.

Blood vessels

The supply blood to the tooth

Sensory nerves

They are sensitive to heat, pain and cold.
The tooth begins paining when bacteria destroy the pulp cavity.

Cement

- It fixes the tooth in position
- It protects the tooth.

Gum

- Gives extra support to the tooth in the jaw bone.

Jaw bone

- Holds the tooth in one position.
- Protects the tooth

Diseases of the tooth

Tooth decay (Dental caries)

It is caused by bacteria.
Bacteria acts on sugar and starch remains on the teeth producing lactic acid that wears and tears the enamel and makes a hole in the dentine and pulp cavity.
Pain begins when the bacteria destroys the pulp cavity.
NOTE: Dental amalgam (cement) can be used to fill the holes made on the teeth.

Plague

A brownish substance forms on the outer surface of the teeth

Disorder of the teeth

Cracked teeth

Improper growth of teeth

Broken teeth

3. Periodontal disease

- This is an infection of the gums and tooth sockets
- It is caused when plaque is neglected

4. Gingivitis

- It is a gum disease caused by bacteria
- It leads to the swelling and bleeding of the gum.
- It also causes bad smell from the mouth

Improper growth of teeth

a) Definition

this is when teeth grow in a wrong way.

b) Causes of improper growth of teeth

- Dental accident
- Lip biting
- Early loss of milk teeth
- Finger nail biting
- sucking fingers

c) Dangers of improper growth of teeth.

- Difficulty in chewing
- Poor facial appearance
- Speech problems

Dental Hygiene or oral health

Is the way of keeping our teeth free from germs.

Care for our teeth (Dental Hygiene)

- Brush the teeth after every meal.
- Avoid drinking very hot and cold things.
- Avoid eating too much sweets.
- Rinse your mouth with water and salt after every meal.

- Eat plenty of fruits and vegetables.
- Visit a dentist regularly for dental check ups.
- Eat a balanced diet.
- Dental flossing

Things used in caring for our teeth

- Tooth brush - Clean water
- Tooth paste - Small sticks
- Dental floss
- Charcoal
- Tooth pick
- Ash etc.

How to brush our teeth

- Brushing the teeth should be up and down movement of the tooth brush but not side ways to avoid damaging the gum

Reasons why we brush our teeth

- Prevent tooth decay
- Prevent bad breath.
- To remove food remains (microbes)

SANITATION

Sanitation is the general cleanliness of our environment.
Sanitation is a way of keeping our environment clean.

Elements of sanitation / activities under sanitation

- Sweeping the compound, houses etc.
- Mopping houses, classrooms etc.
- Slashing bushes around our homes, school, road sides, water sources.
- Picking and burning rubbish.
- Proper disposal of garbage or rubbish.
- Draining stagnant water around our homes and schools.
- Dusting tables and chairs.

- Removing cobwebs from the kitchen latrines and houses.
- Digging water channels along the roads, in the schools and home compounds.
- Removing broken bottles from the compound
- Proper disposal of faeces

Importance of sanitation

- Prevents the spread of germs.
- Promotes good health in community.
- It makes a home clean and attractive
- Prevents bad smell

Items used in keeping proper sanitation

- Brooms
- Rake
- Rag / mop
- Water
- Soap
- Slasher
- Drier
- Scrubber
- Rubbish pit
- Spade
- Bins
- Etc

Elements of a good home

- A kitchen
- A bathroom
- A rubbish pit
- A plate stand / rack
- A toilet / latrine
- A well ventilated house

Qualities of a good home

- It should have a toilet
- It should have a bathroom
- It should have a kitchen

- It should have a plate stand
- It should have a rubbish pit

Dangers of poor sanitation

- It leads to the spread of diarrheal disease
- It causes bad smell
- It increases on the expenditure for health services.
- It leads to isolation

Germs and diseases

A germ is a small / tiny living organism that cause diseases.

Germ are too small to be seen with naked eyes. They are seen using a microscope

Types of germs

These include;

Virus

Bacteria

Protozoa

Fungi

Where germs are found

Germs are found in;

- Faeces and Urine
- Contaminated water
- Soil
- Air
- On dirty clothes
- On dirty beddings
- Under dirty finger nails.
- Blood
- Inside the body
- On our bodies
- On dirty food
- On dead bodies

How germs enter our bodies

- Through eating contaminated food.
- Through the nose when we breathe in contaminated air.

- Through open wounds and cuts
- Through skin contact with infected persons.
- Through sharing clothes with an infected person.
- Through vectors.

THE GERM PATH (4FS)

These stands for

(i) Faeces
(ii) Flies
(iii) Food
(iv) Fingers

Control of the spreading of germs

- Boil water for drinking.
- Wash hands before eating food.
- Wash hands after visiting the latrine or toilet.
- Destroy the breeding places of vectors.
- Kill the vectors by spraying.
- Cover food.
- Have proper disposal of garbage.
- Have children immunized.
- Covering wounds and cuts

ROTTING / DECAY

- Rotting is the breakdown of dead matter by bacteria.
- It requires warmth, darkness and moisture.

Importance of rotting / decay

- Rotting produces humus from dead organic matter.
- It destroys garbage heaps.
- It destroys faeces in latrines and sewage systems.

Dangers of rotting

- Rotting produces a bad smell.
- Rotting is a source of germs.
- Rotting causes wounds to be septic.

- Rotting attracts some vectors

Common diseases caused by germs

Diseases	Causative germ
Trachoma	Virus
Red eyes / conjunctivitis	Bacteria
Cholera	Bacteria
Typhoid	Bacteria
Dysentery	Bacteria / amoeba
Diarrhoea	Bacteria / virus
Ring worm	Fungus
Chicken pox	Virus
Diphtheria	Bacteria
Pneumonia	Bacteria / virus
Tetanus	Bacteria
Measles	Virus
Polio	Virus
Whooping cough (Pertussis)	Bacteria
Scabies	Itch mites
Malaria	Plasmodium (Protozoa)
Rabies	Virus
Typhus fever	Bacteria

TOPICAL REVISION QUESTIONS

1. What do you understand by term Sanitation?
2. Mention any five activities involved under sanitation.
3. Suggest any two importances of sanitation to a community.
4. Give any four items used in keeping proper sanitation.
5. What is a germ?
6. Outline any four types of teeth.
7. How can germs spread from one person to another? (Give three)
8. Suggest any three places where we can find germs.
9. Write 4Fs in their correct order.
10. Mention any two ways of controlling the spread of germs in our environment.
11. Define rotting?
12. Give any two importances of rotting to our environment.
13. Mention two dangers of rotting to our environment.

14. Which type of germ causes the following diseases

(a) Trachoma (b) Cholera (c) Diphtheria (d) Malaria (e) Polio

Communicable diseases (infectious diseases)

These are diseases that can spread from one person to another.

Communicable diseases can be called infectious diseases or transmissible diseases

Examples of communicable diseases

- Measles
- Diarrhoea
- AIDS
- Ebola
- Malaria
- Bilharzias
- Dysentery
- Polio
- Tuberculosis
- cholera
- Ringworm

Non communicable diseases

These are diseases that do not spread from one person to another.

Examples of non communicable diseases

- Diabetes
- Anaemia
- Kwashiorkor
- Rickets
- High blood pressure
- Cancers
- Heart attack
- Sickle cells
- Nutritional deficiency diseases
- Beriberi
- scurvy
- pellagra
- goitre

Diarrhoeal intestinal diseases (faecal diseases)

Diarrhoea is the passing out of watery faeces frequently.

Examples of diarrhoeal diseases

- Dysentenry
- Diarrhoea

- Cholera
- Typhoid

Causes of diarrhoea

- Bacteria
- Viruses

Dehydration

Dehydration is a condition of the body when the body does not have enough water in it.

Causes of dehydration

- Severe diarrhoea
- Severe vomiting

Signs of dehydration

- Sunken eyes
- Passing out little/no urine out
- Dry lips
- Dry eyes
- Sunken soft spot on a babies head (fantanelle)
- A pinch of skin takes long to go back to its position.

Prevention of diarrhoea

- Covering left over food
- Washing hands before eating food
- Drinking clean boiled water
- Washing hands after visiting a toilet
- Proper disposl of faeces in latrines
- Washing fruits and vegetables before eating them
- Destroying breeding places for houseflies
- Proper disposal of rubbish

Treatment of dehydration

- Giving the victim oral rehydration solution (ORS)
- Drinking a lot of fluids eg water , fruit juice , milk

How to prepare ORS from the suckets

- Wash hands with clean water and soap
- Measure one litre of clean cold water in a clean container.
- Open one packet of ORS into water.
- Mix the solution
- Taste the solution
- Give the solution to the victim

Preparing ORS using salt , sugar and water(local preparation of ORS)

- Wash hands with clean water and soap.

- Measure one litre of clean boiled water in a clean container
- Measure one leveled tea spoon of salt and eight leveled tea spoon of sugar in water.
- Mix the sugar anf the salt with water to dissolve
- Taste the solution
- Give the solution to a dehydrated person.

Solutes and solvents used

Solutes: sugar and salt

Solvent: water

Qn: Why is water known as a universal solvent?

It dissolves all solutes

Dysentery

Dysentery is the passing out of watery faeces with blood.

Causes of dysentery	**Kind of dysentry**
1. Bacteria (shigella)	bacillary dysentery
2. Amoeba	amoebic dysentery

How dysentery spreads

- Drinking contaminated water
- Eating contaminated food
- Eating using unwashed contaminated hands.

Signs and symptoms of dysentery

- Severe bloody diarrhoea
- Abdominal pain
- Loss of appetite
- Dehydration

Prevention of dysentery

- Proper disposal of faeces
- Proper disposal of rubbish
- Washing hands before eating
- Washing fruits and vegetables before eating them
- Washing hand after visiting latrines

Cholera

Cholera is diarrhoeal disease caused by bacteria known as vibrio cholerae.

Signs and symptoms of cholera

- Severe diarrhoea
- Severe vomiting
- Dehydration
- Body weakness

How cholera spreads

- Through drinking contaminated water
- Eating contaminated food
- Eating using contaminated hands
- Eating contaminated fruits and vegetables

Prevention of cholera

- Drinking clean boiled water
- Covering left over food.
- Proper disposal of faeces and rubbish
- Washing hands before eating

Typhoid fever / enteric fever

Cause : It is caused by bacteria known as salmonella typhi

Signs / symptoms

- Abdominal pain
- Body temperature rise (fever)
- Headache
- Diarrhoea
- abdominal discomfort

How typhoid spread

- Drinking contaminated water
- Eating contaminated food
- Eating with unwashed hands

Prevention and control of typhoid

- Drinking clean boiled water
- Covering leffer over food
- Washing fruits and vegetables before eating them.
- Washing hands before eating.

INTESTINAL WORMS

Intestinal worms are internal parasites

What are parasites?

Parasites are living organisms that live and get food from other living organisms for survival.

A host is a living organism on which a parasite depends.

Examples of intestinal worms include:-

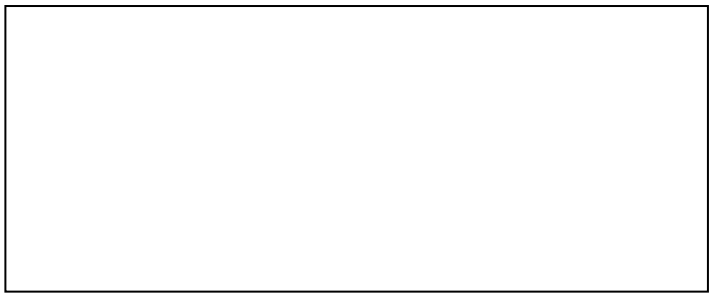
- Hook worms
- Round worms
- Guinea worms
- Fluke worms

- Tape worms - Thread worms
- Pin worms

HOOK WORMS

- They are about 8 – 13mm in length
- They live in small intestines where they hook themselves to the walls of the intestines with their hooked mouth and feed on blood.
- The female lays eggs which pass out in stool or feaces.
- The eggs hatch out in water or damp soil and enter through bare feed especially around the ankles.
- They penetrate the skin and enter the blood streams where blood carries them to the lungs.
- From lungs they are coughed to the gullet and swallowed to the stomach and then to the small intestines where they stay.
- Hook worms are dangerous because when they become many in number they suck blood and cause anaemia (Hook worm anaemia)

Structure of hook worms



Signs and symptoms

- Abdominal discomfort
- Loss of weight
- Body becomes tired and weak.
- Diarrhoea
- The tongue, gums, eyelids and finger nail becomes pale.

Prevention

- Wear shoes if possible especially in wet places.
- Always use latrines and afterwards wash your hands with water and soap.

Treatment

- Go to be examined by doctor in the hospital.

- Eat meat, fish, eggs and dark green leafy vegetables.

ASCARIS WORMS (round worms)

- They are about 15 – 35cm long.
- They live in the small intestines and feed on digested food.
- Children can get ascaris worms in contaminated food dirt around houses, in gardens and get round worms eggs in the finger nails.
- Ascaris worms enter our bodies through eating un washed fruits and raw vegetables where the eggs may be attached.
- When one eats un washed fruits and vegetables the eggs get into mouth, stomach and into the intestines and remain feeding or digested food.
- When they are many in number, they block the intestines and cause constipation or diarrhoea.
- Ascaris worms cause an infection called ascariasis

Structure of ascaris worms

Signs and symptoms

- Abdominal pain.
- Fever, diarrhea and restlessness.
- Grinding of the teeth in children.

Prevention

- Wash your hands before eating anything.
- Do not play in dirty places.
- Do not share plates because others may not have washed their hands.
- Wash fruits and vegetables before eating.
- Wash hands after visiting the latrine.
- Defecate in latrines only.
- Cut finger nails to avoid keeping round worm eggs.

Treatment

- Seek medical advice immediately you think you have round worms.

TAPE WORMS

- They grow to more than 30ft or 10m long.
- They enter our bodies through eating half cooked beef or pork and live in our small intestines.
- They hook themselves on the walls of the intestines and suck digested food.
- When mature, the tape worms shed their segments containing thousands of mature eggs which are passed through feaces or stool.
- The mature eggs can stay up to one year on grass until either a cow or pig eats the grass with the eggs.
- When the eggs are swallowed by either pig or cow, they enter their bodies into their blood and go for another stage of development in the mucus.

Structure

The scolex

Functions of the parts

a) hooks attach the worm to the walls of the small intestine

b) Suckers - provide extra attachment of the worm to the walls of the small intestines

Signs and symptoms of tape worm infection

- The person becomes weak.
- A person passes out stool with tapeworm mature eggs segments.
- The person passes out watery stool.

Spread

Through eating half cooked meat

Prevention and treatment of tape worms

- Eating properly cooked meat
- Go for treatment as soon as possible.

PIN WORMS / THREAD WORMS

- These live in the large intestines especially in the rectum.
- The female crawls out at night through the anus and lays its eggs around the skin.
- This cause itching around the anus especially at night.
- They are white in colour and small of about 8 – 13mm long.
- When the infected person scratches the itching part and later handles food staff or puts fingers in the mouth, the eggs are swallowed therefore reinfecting him / herself.
- If the eggs hatch out around the anus, the worms crawls back into the large intestines.
- However, if the infected person shares edible with someone without washing hands, the eggs are spread and the next person will swallow the eggs and become infected.
- The eggs can be contaminate beddings, under wears, knickers and they can be spread through this way.

Structure

Signs and symptoms

- Abdominal discomfort.
- Lack of sleep
- Restlessness.

Prevention and control

- Seek treatment from a qualified health worker.
- Have an infected person wear tight fitting shorts to prevent scratching of the anus.
- Change under clothing and bedding daily.

- Scrub toilet seats with soap and water everyday.
- Have family members treated.
- Wash hands with soap and clean water after the toilet.
- Cut finger nails short and keep them clear.

WHIP WORMS

- They are about 35 to 50mm in length with the head smaller than the tail. This is why they are called whip worms because they look like whips worms because they hook like whips.
- They live in the large intestines without causing any symptom.
- They produce large numbers of eggs.
- If great in number, they cause diarrhea and intestinal discomfort.
- The eggs pass out with stool and hatch out in the soil.
- They enter our bodies in the same way as the round worms'

Structure

TOPICAL REVISION QUESTIONS

1. Briefly explain the meaning of diarrhea.
2. Mention any four examples of diarrhoeal diseases.
3. What is dehydration.
4. Suggest any two causes of dehydration.
5. Mention two signs and symptoms of a dehydrated person.
6. Give two ways of preventing diarrhoeal diseases.
7. List down the steps taken when mixing SSS.
8. What is meant by:-
   (i) Intestinal worms
   (ii) Parasites
9. Give four examples of intestinal worms.
10. Why are hook worms and whip worms referred or called so?
11. Mention any two intestinal worms that live in

(a) Small intestines
(b) Large intestines

12. How can one get the following worms?
    (a) Hook worms
    (b) Round worms
    (c) Tape worms
13. Suggest any two signs and symptoms of intestinal worms.
14. Why are we advised to wear shoes or sandals when going in a latrine?
15. Identify the worms below
    (a) (b) (c)

TOPIC 2
VECTORS AND DISEASES

VECTORS

- Vectors are living organisms that spread disease germs.
- Germs are living organisms that cause diseases.

Examples of common vectors

- House flies
- Tsetse flies
- Cockroaches
- Mosquitoes
- Fleas
- Black fly
- Ticks
- Lice
- Mad dogs
- Mites
- Water snails

a) Insect vectors

Houseflies , tse tse flies , cockroaches , mosquitoes

b) Animal vectors

Mad dogs / rabied dogs.

Life cycle of insect vectors

These are two types of life cycles namely

1. Complete metamorphosis: This is the life cycle with four stages of development / growth. These stages are eggs. Larva, pupa and adult.

Illustration of complete metamorphosis

Examples of vectors which undergo complete metamorphosis

- House flies
- Mosquitoes
- Black flies
- Bees
- Butterflies
- Moths

2. Incomplete metamorphosis: This is the life cycle with three stages of growth. These stages are eggs, nymph and adult.

Diagram of incomplete metamorphosis

Examples of vectors which undergo incomplete metamorphosis

- Cockroaches
- Fleas
- lice

The life cycle of a housefly.

Structure of a housefly

Diseases spread by a housefly

1. Dysentery

These are two types of dysentery namely:-

- Amoebic dysentery (caused by amoeba)
- Bacillary (by bacteria)

Dysentery is caused by the following germs:

(a) Bacteria (shigella)

(b) Protozoa (entamoeba)

How is dysentery spread

- By drinking contaminated water.
- By flies falling on our food.
- By eating contaminated food.

Signs and symptoms of dysentery

- Severe diarrhea stained with blood.
- Loss of appetite.
- Dehydration

How dysentery is prevented

- Use toilets or latrines all the time.
- Keep toilets or latrines clean.
- Wash hands before touching or eating any food.
- Wash fruits and vegetables before eating them.
- Destroy all bleeding places of house flies to stop them from multiplying

2. **Cholera**
   - It is a very infectious disease that can kill in a very short time (6 – 24hrs)
   - It is caused by the vibrio cholerae bacteria.

Signs and symptoms of cholera

- Serious diarrhea
- Vomiting
- Body weakness
- Dehydration

How to control and prevent cholera

- Use latrines / toilets daily.
- Cover left over food to avoid flies.
- Wash hands with soap and water to remove germs.
- Wash fruits and vegetables before eating them.
- Boil water before drinking it.

3. **Typhoid**

Typhoid fever is caused by bacteria called salmonella typhi.

How typhoid is spread

- By drinking contaminated water.
- By flies falling on our food.

Signs and symptoms of typhoid

- Persistent fever with headache.
- Increasing body pain and diarrhea.
- Abdominal pain.

How to prevent and control typhoid

- Cover all foods and drinks.
- Use toilets / latrines daily.
- Drink clean boiled water.
- Observe good food hygiene.
- Wash hands with clean water and soap before eating food.
- Wash hands with clean water and soap after latrine / toilet.

4. **Trachoma**

- It is a highly contagious / infectious disease which affects the eyes.
- It is caused by a virus called Chlamydia.

How is trachoma spread

- Sharing of the same basin of water with an infected person.
- Shaking hands with another infected person and then transfer the hands to the eyes.
- Sharing of towels and handkerchiefs with an infected person.

Signs and symptoms of trachoma

- Redness and itching of the eyes.
- Swelling of the eye lids.
- Pain while looking at light.
- Watery discharge from the eye lids.

Prevention and control of trachoma

- Avoid sharing basins, towels and handkerchiefs with an infected person.
- Avoid shaking hands with an infected person.
- Get treatment as soon as possible because trachoma can make one blind.

1. Diarrhoea

- It is caused by either bacteria, virus or worms.
- These germs enter our bodies when we eat or drink contaminated water and food.
- Most diarrhoeal disease are spread by the 4Fs i.e.
  Faeces ⟶ Flies ⟶ Food ⟶ Fingers in that order.

MOSQUITOES

There are three types of mosquitoes namely:-

(i) The anopheles mosquito.
(ii) Culex mosquito.
(iii) Aedes or Tiger Mosquito.

Life cycle / History of an anopheles mosquito

Life history of an aedes / Tiger and culex Mosquito

(a) The mosquito lays its eggs in stagnant water.
(b) The eggs hatch into Larva, pupa, adult.
(c) The larva stage of a mosquito is called a wriggler.

Note:

1. A mosquito goes through a complete metamorphosis.
2. Mosquitoes have a sucking mouth part called a proboscis which they use to feed.

Illustration

Habitat of Mosquitoes

Mosquitoes lay their eggs in stagnant water or they breed in stagnant water.

Types of Mosquitoes

1. **The anopheles mosquito**

   This mosquito spreads a germ called plasmodia (ium). This germ (Plasmodium) is spread by a female anopheles mosquito which cause Malaria.

   Life cycle of anopheles mosquitoes (diagrams)

   A male anopheles mosquito doesn't bite human beings. It instead feeds on nectar of flowers and juices of plants.

   Malaria

a) **causes** - by plasmodia

b) **Spread** - by female anopheles mosquito

c) **Signs and symptoms of malaria**

- Tiredness or weakness.
- Rise in the body temperature.
- Rapid breathing and rapid pulse rate.
- Serious sweating of 2 – 4 hours.
- Abdominal pain, diarrhea and vomiting.
- Shivering and chattering of teeth.

2. **Culex Mosquito**

- This mosquito spreads a worm called **filaria** which causes **elephantiasis.**
- Elephantiasis makes legs to grow big and look like those of elephants hence the name elephantiasis.
- The female culex mosquito feeds on blood before it lays eggs in stagnant water.

3. **Aedes / Tiger mosquito**

- This mosquito spreads a virus which causes either yellow fever or dengue fever in human beings.
- The mosquito spreads the virus from an infected person to another and it lays eggs in stagnant water.

Note: Yellow fever can be prevented by **immunization**

How to control Mosquitoes

- Destroying any area with stagnant water.
- Slashing or cutting long grass near home or school.

- Spray insecticides to kill mosquitoes.
- Keep fish in ponds and dams to feed on mosquito larva.
- Pour oil on stagnant water. This stops the larva from breathing by cutting off oxygen supply.
- Sleep under a treated mosquito net.
- Using screens on ventilators to prevent mosquitoes from entering.

COCKROACHES

- A cockroach has a flat body. Most cockroaches are dark brown while others are black.
- A cockroach is an insect with three main body parts i.e. head, thorax abdomen.

Feeding habits of cockroach

- Cockroaches mainly move at night looking for food and water and during day time, they do not move.
- Cockroaches are active at night.

A note: A moth is also an active insect at night.

- Cockroaches feed on our food and they transmit germs on it.

Habitat

- Cockroaches hide or live in dark places like behind cupboards, Old cookers, behind refrigerators, boxes, book shelves, latrines etc.

Life cycle of a cockroach

- A cockroach undergoes an incomplete metamorphosis.
- The female lays eggs in an egg case.
- The eggs hatch into nymphs.
- Nymphs look like adult cockroaches but have shorter or n wings.
- Later, nymphs change into adults.

Dangers of cockroaches

- Cockroaches carry germs which cause diseases to us.

- Cockroaches damage our books.
- They spoil our clothing.

Diseases spread by cockroaches

Cockroaches are suspected of carrying germs (pathogens) which cause diseases.
The disease include:-

- Polio
- Leprosy
- Typhoid
- Diarrhoea
- Amoebic dysentery
- Cholera
- Food poisoning

Prevention and control of cockroaches

- Cover all the food.
- Keep the house clean.
- Smoke the latrine regularly.
- Spray the cockroaches with insecticides.
- Keep covered food in the cupboard.

TSETSE FLIES

Life cyle of a tse tse fly

Tsetse flies breed in

(i) Thick vegetation
(ii) Along river banks
(iii) Shady vegetation

Note:

1. A tsetse fly undergo complete metamorphosis.
2. A tsetsefly does not lay eggs. The eggs are just hatched within the abdomen.

Diseases spread by tsetse flies

Tsetse flies transmit a germ called tryponosoma which cause

1. Sleeping sickness (in human beings)
2. Nagana in (Animals)

Note:

(a) Sleeping sickness and Nagana are transmitted by a female tsetsefly.
(b) The female tsetse fly feeds on blood.
(c) The male tsetsefly feeds on plant juices.

Signs and symptoms of sleeping sickness

- Prolonged fever
- Loss of body weight.
- Body weakness
- One becomes sleepy.

Prevention and control of sleeping

- Spray insecticides to kill tsetse flies.
- Use traps to trap adult tsetse flies.
- Treat the infected ones in hospitals.

BLACK FLY

- It is small and black
- It is also called Jinja fly or simutium fly.

Note:

1. A black fly breeds in fast flowing rivers where it lays its eggs.
2. It undergoes a complete metamorphosis.
3. A black fly spreads a filarial worm called **anchocerca vulvulus which causes river blindness.**

Signs and symptoms of river blindness.

- Lumps appear on legs and hips.

- Severe skin itching.
- Skin rashes appear on the body.

Prevention and control

- Spray insecticides to kill the adult black fly and its larvae.
- Treat infected people.

LICE

There are three types of lice namely:-

1. The body lice: They live in clothing. Their eggs are found in the folds and seams of clothings.
2. Hair lice: They live in the hair on our heads. They are spread by infected combs, hair brushes, hats, turbans.
3. Crab lice: they live on the hair around our private body parts. They are spread when the male and female partners join their private parts during sexual intercourse.

Note: The lice suck blood, cause itching, irritation and also spread / transmit diseases called typhus fever and relapsing fever.

How lice are controlled

- Keeping hair short.
- Washing clothings
- Ironing clothes.
- Combing hair every day.
- Spread beddings in sunshine.
- Do not share clothes.

RATS FLEAS

- Rat fleas are carried by rats.
- They transmit bacteria which causes bubonic plague.
- Bubonic plague is caused by bacteria called yersinia perstis

Signs and symptoms

- High fever.
- Swelling in the neck and arm pits.
- Headache.

Prevention and control

- Kill all rats.
- Spray with insecticides to kill fleas
- People should be given anti – plague immunization in case of an out break.

WATER SNAILS

Water snails transmit the schistosoma worm which causes bilharzia (Schistosomiasis)
Bilharzias is caused by bilhazia flukes (schistosomes)

Where does the schistosoma live in the body?

- In the urinary bladder.
- Large intestines
- Small intestines.

How do we get bilharzias

- Bathing contaminated water.
- Drinking contaminated water.
- Swimming in contaminated water.

Signs and symptoms of bilharzias

- Passing out blood in urine. - enlargement of the liver and spleen
- Passing out blood in faeces.

How to prevent bilharzia

- Wearing shoes when walking in wet places e.g. swamps.
- Boiling water for drinking.
- Killing water snails
- Use latrines / toilets for proper disposal of wastes.

MAD DOGS

- Dogs transmit a virus which causes rabies.
- Other animals which transmit rabies include:-
  - Infected foxes.
  - Infected domestic cats.

Signs and symptoms of rabies

- Fever
- Headache
- Body weakness
- Salivation
- Mental confusion
- Difficult in swallowing
- Sudden death

Prevention and control

- Kill all suspected mad dogs.
- Vaccinate all dogs with anti – rabies vaccine

TICKS

- Ticks transmit a germ called rickettsia which causes typhus fever
- Ticks live on bodies of both wild and domestic animals and humans
- They feed by sucking blood from animals.

Prevention and control of ticks.

- Spray all domestic animals e.g. dogs and cats.
- Dip / spray all domestic animals e.g. cattle.
- Keep the kraal clean.

Note: Ticks are not insects because they have eight legs and have no wings.

SUMMARY

No.	Vector	Disease (s)	Cause
1.	Housefly	• Cholera • Typhoid • Trachoma • Dysentery • Diarrhoea	• Bacteria (Vibro cholera) • Bacteria (salmonella typhil) • Virus (Chlamydia) • Bacteria (Shigella), amoeba • Virus, bacteria, worms
2.	Mosquitoes (i) Female anopheles (ii) Culex mosquito (iii) Tiger / aedes mosquito	• Malaria • Elephantiasis • Dengue fever and yellow fever	• Protozoa (Plasmodium) • Filaria worm. • Dengue fever virus and yellow fever virus.
3.	Cockroach	• Leprosy • Polio	• Bacteria • Virus

		• Typhoid • Cholera • Diarrhoea • Dysentery	• Bacteria (salmonella) • Bacteria (Vibrio cholera) • Virus, bacteria worms. • Protozoa (entamoeba), bacteria
4.	Tsetse fly	• Slepping sickness in man.	• Protozoa tryponosoma
5.	Black fly	• River blindness	• Worm (onchocerca vulvulus)
6.	Rat fleas	• Burbonic plague	• Bacteria (Yersinia pestis)
7.	Itch mites	• Scabies	• Itch mites
8.	Water snail	• Bilharzias	• worm
9.	Dogs	• Rabies	• Virus
10.	Lice	• Typhus fever	• Bacteria (rickettsia)

END OF TOPIC QUESTIONS

1. (a) What are communicable diseases?
   (b) State any two examples of the above diseases.
2. What is the difference between a germ and a vector?
3. How is the larva stage of a housefly useful?
4. Give any vectors which undergo incomplete metamorphosis.
5. What name is given to the breathing organs of an insect?
6. How is a housefly able to spread germs?
7. What name is given to the
   (a) Larva stage of a housefly?
   (b) Adult stage of a house fly.
   (c) Larva stage of a mosquito.
8. List down the diseases spread by the following mosquitoes:
   (i) Female anopheles mosquito _____
   (ii) Culex mosquito _____
   (iii) Aedes / Tiger mosquito: _____
10. Identify the diseases of a mosquito that can be prevented by immunization.
11. Give any two dangers of cockroaches to man.
12. How is a nymph different from an adult cockroach?
13. Identify the disease that is spread by a tsetsefly in a
   (a) man _____
   (b) animals _____
14. Why are ticks not insects?
15. Name the germ that causes malaria.

16. Complete the table below:-

Vector	Disease
Culex Mosquito	
	Scabies
Rat fleas	_____
Water snails	_____

TOPIC 3

ACCIDENTS, POISONING AND FIRST AID

Accidents:

What is an accident?

An accident is a sudden happening that can cause harm or death

Or: It is an unexpected injury to the body.

Examples of accidents in our community

- Fractures - Poisoning - Falls - cuts
- Burns - Drowning - Electric shocks - wounds
- Scalds - Bites (i.e. snake) - Bruises - road traffic accidents

Road traffic accidents

Traffic refers to the movement of vehicles and people in a particular area.

Road traffic accidents are sudden happenings that cause death or harm to road users.

Examples of road users include:-

(a) Pedestrians: These are people who walk along roads on foot.

(b) Cyclists: These are people who ride motorcycles and bicycles.

(c) Drivers and passengers:

(d) Animals e.g. cattle, camel, horses, donkeys.

Causes of road traffic accidents.

- Over loading
- Over speeding.
- Driving under the influence of alcohol.
- Failure to follow road signs.
- Playing on roads.
- Poor conditions of roads.

- Overtaking in sharp corners.
- Careless crossing of roads.
- Driving vehicles in dangerous mechanical conditions (D.M.Cs)

Prevention of road traffic accidents

- Following or observing road signs.
- Avoid over loading vehicles.
- Never drive while drunk.
- Avoid playing on or near roads.
- Buildings should be atleast 20 metres from the road.
- Put zebra crossings on busy roads.

How to cross a busy roads

(i) First stop alongside the road.
(ii) Look right - look left.
(iii) Look right again.
(iv) If the road is clear then cross but don't run.

Where can we cross busy roads from?

- At zebra crossing
- Fly overs
- Traffic lights
- Using Islands on the road
- Where there are traffic officers / guides

Burns

Definition: This is an injury caused by dry heat e.g.

- Hot metals
- Flat iron.
- Burning fire.
- Electric heaters
- Growing charcoal.

Effects of burns

Dehydration - Severe pain
Severe wounds

Scalds

Definition:

This is an injury caused by wet heat of

- Hot water
- Hot tea
- Hot porridge.
- Steam.

How to prevent burns and scalds?

(i) Cook from a raised fire place.
(ii) Avoid playing near cooking places or open fires.
(iii) Keep young children out of fire reach.
(iv) Construct fire guards around fire places.
(v) Teach children the dangers of fire or hottings.

Why do we treat burns and scalds?

To reduce changes of infections.

To save life

POISONING

Poison is any substance which affect health or cause death when taken.

Poisoning is the act of taking in something poisonous to the body.

Examples of poison common in our community (homes, schools)

- Rat poison
- Insecticides, pesticides, herbicides.
- Liquid cleaners e.g. jik.
- Paraffin, diesel or petrol.

Causes of poisoning

- Taking expired drugs
- Eating expired foods
- Ignorance
- Taking over dose
- Poor storage of drugs

Signs and symptoms of poisoning

- Vomiting
- Rapid breathing
- Fever and sweating.
- Loss of body balance
- Mental confusion
- Internal and external bleeding.

FRACTURES

A fracture is a broken or cracked bone.

Types of fractures.

There are three types of fractures namely;-

(i) Simple fracture
(ii) Compound fracture
(iii) Green stick fracture

Simple fracture

This is when the broken bone remains inside the skin.
Illustration

Signs and symptoms of a simple fracture.

- The affected part swells.
- Too much pain around the injured part.

Illustration

Compound (fracture)

This is when the broken bone comes out of the skin.

Illustration

Signs and symptoms

- Severe bleeding occurs.
- Broken bone comes out of the skin.

Illustration

Green stick fracture

- This is when a bone bends but remains inside the skin.
- It is common in your children because they have soft bones.

NB : Greenstick fracture is under simple fraction

Illustration

First Aid for fractures

Sprains, strains and dislocation

- A sprain is a torn or stretched ligament.
- A strain is a torn or stretched muscle.
- A dislocation is when a bone is displaced at a joint.

NB: Ligament joins bones to bones.

Signs and symptoms of sprains, strains and dislocation.

- A lot of pain is felt around the injured part
- Swelling around the joint.
- Difficulty in moving the limbs.

Cuts

Effects of cuts.

- They cause wounds.
- Cuts cause bleeding.

Types of cuts.

Minor cuts. These are cuts which do not go deep in the skin.

Deep cuts are those which go deep in the skin.

Signs of cuts

Severe bleeding.

Bruises

What is a bruise?

A bruise is a body swelling caused by internal bleeding.

Causes of bruise

- Accidental hitting of the body parts.

Wound

Definition: A wound is a tear of the body tissues.

Types of wounds

1. Incised wounds: Are wounds caused by sharp objects that cause open bleeding. e.g. razor blade, knives.

Lacerated wounds

These are wounds caused by objects with irregular edges e.g. barbed wires, animal teeth; animal claws.

Contused wounds

These are wounds caused by direct blows by some objects.

Punctured wounds.

Are wounds which have a small opening but very deep. They are caused by very sharp pointed objects e.g. needle, nails, arrows, spears etc.

Snakes bites

The first aid for snake bites is to tie a cloth above the bitten part.

Why:

Top prevent poison from moving to the heart.

FIRST AID

Definition:

This is the immediate / first / Initial help given to a casualty before being taken to the health centre.

Who is a casualty?

A casualty is an accident victim or is a person who has got an accident and needs help.

Identify the major reason why we give first aid?

- To save life

Note: The major reason for giving first aid is to save life.

Why do we give fist aid?

(i) To save life.
(ii) To reduce pain.
(iii) To promote quick recovery.
(iv) To reduce / stop bleeding.
(v) To prevent further injuries.

Who is a first aider?

A first aider is a person who gives first aid service to a casualty.

Qualities of a good first aider

- Should be observant

- Should be knowledgeable
- Should be sympathetic
- Should be skilled
- Should be clean
- Should be able to use common sense.

Responsibilities of a good first aider.

- To examine the condition of a casualty.
- To help the casualty as quickly as possible.
- To take the casualty to the nearest health unit.

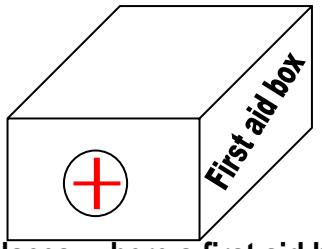
First aid kit

First aid kit is a set of first aid equipment.

First aid kit is a collection of things used to give first aid.

First aid box:

This is a container where things used to give first aid are kept.



Places where a first aid box can be found

- Schools
- Homes
- Offices
- Petrol stations
- Factories
- Banks
- Airport
- Aeroplanes
- Vehicles
- Industries

Note: A first aid box should be painted with bright colours.

Reason: For easy identification

Items found in a first aid box

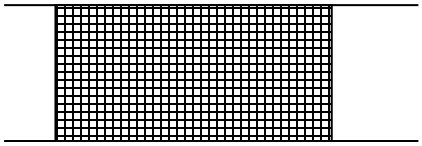
1.	Razor blades	:	Used to cut plasters and bandages.
2.	Safety pins	:	To fasten the bandage.
3.	Bandage	:	Used to tie broken bones
4.	Pair of scissors	:	Used to cut plasters and gauze.
5.	Surgical spirit	:	Used to wash and kill germs around the wound.

6.	Pain killer	:	Used to kill pain.
7.	Cotton wool	:	Used to clean cuts.
8.	Clinical thermometer	:	Used to measure human body temperature
9.	Surgical gloves	:	Used to prevent contamination.
10.	Plaster	:	Used to cover wounds and cuts.
11.	Splints	:	Used to tie and keep the broken in position.

Note:

1. Arm sling holds the broken limb in position.
2. Stretcher is used to carry casualties who can't walk to the health unit (centre)
3. First aid kit is used to give first aid.

Stretchers



First aid for injuries

1. Burns and scalds

Put the injured part in cold water

Why do we put or pour cold water

- To reduce heat in the skin
- To reduce heat from destroying the body cell.

2. Poisoning

Give the casualty plenty of fluids to dilute poison in case of paraffin or petrol

NOTE : Do not make a person to vomit. Why ?

Vomiting can damage throat and lungs.

b) Make a casualty to vomit if he has taken rat poison or any other kind of poison.

How to make the casualty to vomit

1. Give him water mixed with soap.
2. Place the finger in his mouth to the throat
3. **Fracture** : Tie a splint around the injured part.

Reason for typing on splint

To keep the broken bone in position so as to prevent further injuries.

4. Sprain , strains and dislocation

- Wrap a cold wet bandage around the injured part
- Apply a splint incase of a dislocation.

Cuts :

Tie the cut with a clean bandage to reduce bleeding pressure.

Bruises

Apply a cold compress

Wounds

Wash the wound with clean water and soap / surgical spirit.

Snake bites

Tie tightly a piece of cloth above the bitten part.

Why ? to prevent poison from moving to the heart.

TOPICAL QUESTIONS

1. What is an accident?
2. Identify any two common accidents in our homes.
3. How useful are the following during first:-
   (a) Stretcher.
   (b) Sling
   (c) Splints.

4. (a) Define a fracture.
   (b) Why is a green stick fracture common among young children?
   (c) What first aid can you give to some one who has got a fracture?
   (d) State any two causes of fractures.

5. (a) Explain the term poisoning.
   (b) State any two common causes of poisoning in our homes.

TOPIC: KEEPING RABBITS

Definition of rabbitry

- It is a farm of rabbits.
- It is a place where rabbits are kept.

Terms used in keeping of rabbits.

(a) Rabbit keeping This is the rearing of rabbits.
(b) Hutch / pen : This is the home / housing structure of a domestic rabbit.
(c) Burrow : A hole dug by a rabbit.
(d) Buck : This is a mature male rabbit.
(e) Doe : This is a mature female rabbit.
(f) Reveret / kit/ kitten : This is a young rabbit.
(g) Litter : This is a group of young rabbits born together at the same time by one doe.

External parts of a rabbit

Diagram showing

- Head

- Eyes
- Ears
- Nostrils
- Back
- Thighs
- Tail
- Whiskers
- etc.

Reasons why people keep rabbits / uses of rabbits

- Rabbits provide us with meat which is a source of proteins.
- Rabbits are sources of income / money when sold.
- The dung of rabbits can be used as manure in our gardens.
- Some rabbits are kept for their fur.
- Rabbit skins are used to make articles like bags, shoes, etc.
- Rabbits can be kept as pets (for pleasure)

Advantages of keeping rabbits over other animals.

- Rabbits need less food than other animals like goats.
- They do not need a lot of land.
- Management practices like feeding and housing are easily carried out.
- Rabbits multiply quicker than other animals.
- They mature quickly.
- They are cheaper to buy.

Breeds of rabbits

1. **Local rabbits**
    - These have been kept in Uganda for a long time.
    - They are resistant to most diseases.
    - They take long to mature.
    - They are hardy to harsh weather conditions.
    - They have many different colours.
    - They are smaller than exotic breeds.
    - They can live in the bush.
    - They dig holes in the ground where they live.

Exotic breeds of rabbits

- These breeds were imported from other countries.
- They have the same colour.
- They produce bigger quantities of meat.
- They have the same weight and size.
- Their young ones carry parents habits.

Differences between local and exotic breeds of rabbits.

Local breeds	Exotic breeds
• Have different colours • Grow slowly • Small in size. • Resistant to diseases.	• Produce young ones with the same colour. • Grow fast. • Big in size. • Easily get sick.

Examples of exotic breeds of rabbits.

They include the following:-

1. Angora rabbit.
2. Californian rabbit
3. Chinchilla rabbit.
4. Ear – lops
5. Newzealand white

Characteristics of exotic breeds of rabbits

1. The Angora rabbit
    - They are white in colour.
    - They produce fine silky hair which has ready market in Europe.
    - They produce good quality meat.

2. **California a rabbit**
    - The body is white with the nose; tail and feet are black or dark brown.
    - Grow faster than other breeds of rabbits.
    - They weigh up to 5kg when mature.

3. **Chinchilla rabbit**
    - They are grey in colour.
    - Lighter compared to New Zealand and California.
    - They weigh 3½ kg when mature.
    - They are kept for meat.
    - Their skins have ready market in Europe.

4. **Ear – lops**
    - They are bigger compared to others (6kg when mature)
    - Their ears drop on the sides of the head.
    - They grow slowly compared to other breeds.
5. **New Zealand white**
    - They are white in colour.
    - Have short legs and produce a lot of meat.
    - Have pink eyes.
    - The doe produces 25 – 30 rabbits per year.
    - Can reach 5kg when mature.

Qualities of good rabbits to rear

The following factors should be considered when selecting good rabbits to rear.

- Select healthy rabbits with a shinny coat, bright eyes, dry clean nose, without any discharge from the eyes.
- Select rabbits that have plenty of hair and are well shaped.
- Select rabbits that produce a lot of meat.

Housing of rabbits

Qualities of a good rabbit house (hutch):

- Should be strong enough to keep off predators.
- Should be raised from the ground to protect rabbits from dogs and other wild animals.
- It should always be kept clean.
- Should be kept dry to minimize breeding of germs.
- Should allow enough air entering it.
- Should not leak on rainy days.

Materials used to construct a hutch

Wood, nails, wire mesh, iron sheets, etc.

Types of hutches (with diagrams)

- Morrant hutch (Diagram of each hutch)
- Caged modern hutch
- Traditional hutch

Management practices in rabbit keeping

(a) Feeding: Rabbits can be fed on the following

- Green vegetables
- Carrots
- Sweet potatoes leaves.
- Green grass.
- Pellets
- Banana peelings
- Potatoe peelings
- Cabbage leaves.

Points to note:

- Pellets are manufactured animal feeds.
- Rabbits should be given a block of salt to lick, to provide them with mineral salts.
- They should be given salt dissolved in water.
- Does with young ones need more water in order to make milk for their litter.

(b) **Reproduce in rabbits**

- The act of producing young ones in rabbits is called Kindling.
- The buck mates with the doe.
- The doe then becomes pregnant.
- The doe takes 30 days to produce young ones.
- This period of pregnancy is called Gestation period.
- The doe prepares a soft bed made of soft hair from its body when it is about to produce.
- It produces between 7 – 11 young ones. If more are produced, they should be killed as the doe's milk may not be enough for all of them.
- The buck should not be kept together with the doe as it may kill the young ones.

Common Diseases of Rabbits

1. Coccidiosis

Signs and symptoms

- Diarrhoea with blood (dysentery)
- Rabbits have swollen stomach.

- Rabbits lose weight (become small and thin)
- They have rough hair.

Control of coccidiosis

- Keep the hutch clean.
- Feed rabbits on clean food and water.
- Put drugs in clean drinking water.

2. **Scours**

Signs and symptoms

- Rabbits stop feeding.
- Pain in the stomach.
- Rabbits develop diarrhea

Control of scours

- Do not give rabbits wet and mouldy grass.
- Do not give rabbits young grass.
- Clean the hutches and spray regularly.

3. **Ear canker**

Signs and symptoms.

- Itching ears.
- Ears develop wounds with a discharge and become painful.
- Control of ear cancer.
- Clean the ears using paraffin on cotton.
- Do not overcrowd the rabbits in one hutch.

4. **Pheumonia**

Signs and symptoms

- Rabbits begins shivering.
- Difficult breathing
- Rabbits lose appetite.
- They have high temperature

Control of Pneumonia

- Keep hutches dry and clean.
- Keep rabbits away from rain.
- Treat rabbits with dugs.

5. **Colds**

Signs and symptoms

- The rabbit sneezes a lot.
- Rabbit has a runny nose.

Ways of preventing diseases in rabbits

- Always keep rabbit hutches clean and dry.
- Avoid rain into hutches.
- Keep sick rabbits away from others.
- Feed rabbits well.
- Avoid over crowding rabbits in one hutch.
- Always call a veterinary officer to check on the health of rabbits.

Keeping records on a rabbit farm

Records means the written information on a farm e.g.

- Feeds records.
- Health records.
- Production records
- Breeding records
- Financial records.

Importance of keeping records.

- It helps to tell where to profit or loss is made.
- It enables the farmer to plan better for the farm.

TOPICAL REVISION QUESTIONS

1. Give the meanings of the following words.

   (a) Rabbitry (b) Hutch (c) Doe (d) Kindling

2. Of what importance is rabbit keeping to a Uganda? (Give 4 ways)

3. Why do you think it is cheaper to keep rabbits than cows?

4. Name three exotic breeds of rabbits.
5. Write two disadvantages of rearing exotic rabbits.
6. List two locally available materials that rabbits can feed on.
7. What do we call the manufactured feeds for animals like rabbits?
8. Name three diseases of rabbits.
9. Why should a hutch be kept dry?
10. Okello's rabbit has difficulty in breathing. What disease is it suffering from?
11. How can farmers prevent rabbit diseases? (Give three ways)
12. How does a rabbit move?
13. Kid is to goat as _____ is to rabbit.
14. What is the gestation period of a doe?
15. Why should a hutch be raised from the ground?
16. Why should a doe with young ones be given enough water.
17. Why are rabbits given a block of salt to lick?
18. Why should a buck and doe be allowed to mate?