

SEEDS OF GRACE PRI. SCHOOL

P.O BOX NTENJERU- MUKONO



PRIMARY FOUR SCIENCE BOOKLET



HOME STUDY MATERIAL FOR 2024

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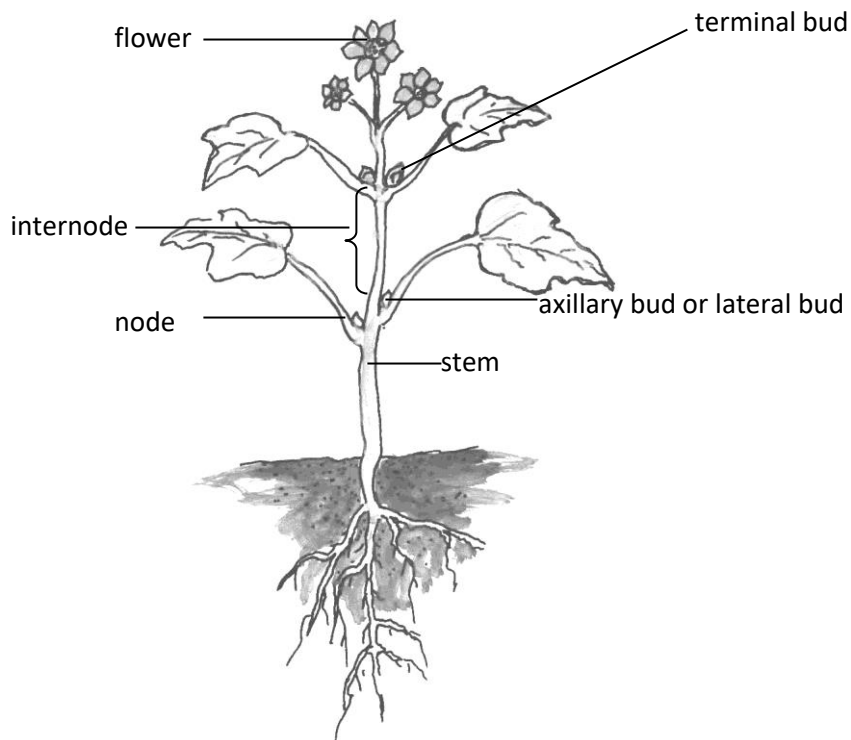
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P.4 SCIENCE LESSON NOTES FOR TERM ONE

Flowering plants

- These are plants that bear flowers.



Classification

on/types of flowering plantws.

a) Monocotyledonous plants

These are plants whose seeds have one cotyledon

Examples of monocots

- maize
- sorghum
- millet
- rice

b) Dicotyledonous plants

These are plants whose seeds have two cotyledons

Examples of dicotyledonous plants.

- Beans
- Ground nuts
- soy
- peas

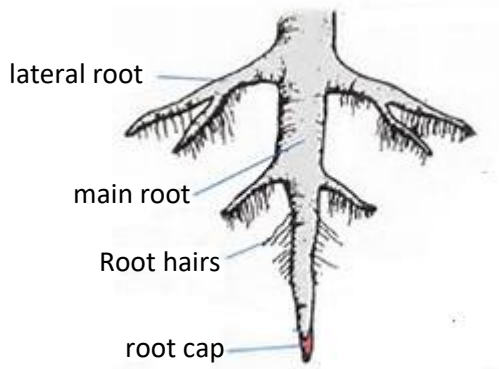
ROOTS

- These are parts of a plant which grow in the soil
- A true root system develops from the radicle of the embryo.

Types of roots

- **Tap roots**
- **Fibrous roots**
- **Adventitious roots**

1. Tap roots



Root hairs: absorb water and mineral salts from the soil

Tap roots: Fix the plant into the soil

Root cap : Protects the growing tip of a root

Lateral : Hold the plant firmly in the soil

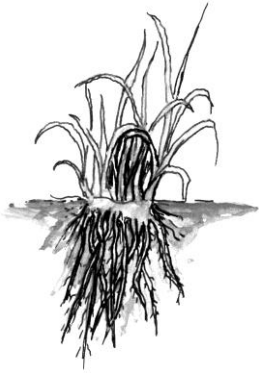
NB: Tap root system is the characteristic of dicotyledonous plants such as beans, soya, peas etc

2. Fibrous roots.

This is the type of root where there are many roots growing randomly from the radicle of a seed.

Fibrous roots are found in monocotyledonous plants. like; maize ,sorghum, millet and wheat.

Illustration



Activity

1. What is a root?
2. State any two parts that make up the root system.
3. How are root nodules useful to the dicotyledonous plants?
4. Identify the use of the organisms found in root nodules.
5. Of what importance are roots to the plant?
6. Name the two parts of a bean seed that make up the embryo.
7. Why are tap roots classified under primary roots?
8. Why is maize called a monocotyledonous plant?

B. ADVENTITIOUS ROOTS.

These are roots which grow from any other part of a plant stem e.g. nodes

Examples include;

- Prop root
- Stilt roots
- Buttress roots
- Storage roots
- Clasping roots
- Breathing roots

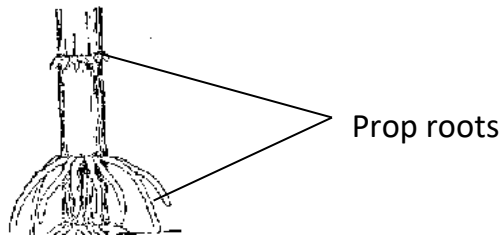
1. Prop roots

These are adventitious roots commonly found on stems of cereal plants e.g maize.

They develop from nodes near the ground level.

They usually develop during flowering stage.

Prop roots help to give extra support to the plant during the time of flowering.



2. Buttress roots.

These are parts of the plant that develop and enlarge from the stem near the ground.

Illustration.



3. Clasping roots.

These are roots found on climbing plants.

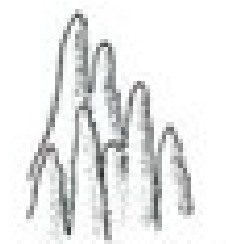
Illustration



4. Breathing roots.

These roots grow from the ground upwards.

Illustration



5. Stilt roots

These roots are found on plants which grow in muddy areas or swamps

Illustration



6. Storage roots.

These are special roots which store food.

They mainly store starch.

Examples of storage roots.

- carrots
- sweet potatoes
- cassava

A. carrots

Illustration



B. Cassava root tuber

Cassava is propagated / planted by use of stem cuttings

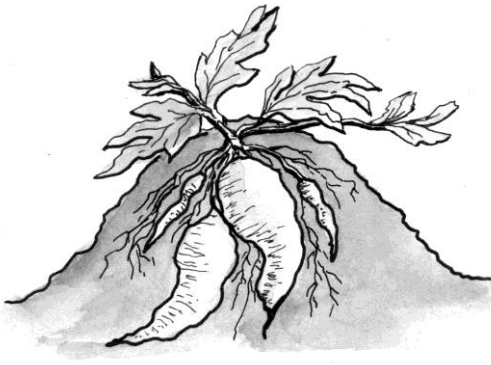
Illustration



C. Sweet potatoes root tuber

This is a swollen adventitious root.

Illustration

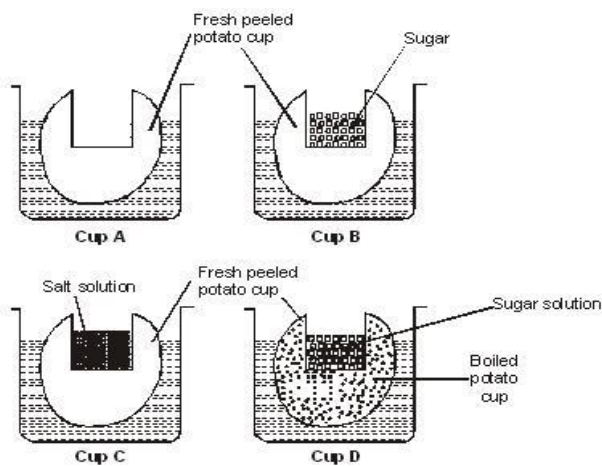


Note: A root tuber is an adventitious root or lateral root which stores food.

OSMOSIS

- Osmosis is the movement of water molecules from an area of low salt concentration to an area of high salt concentration through a semi-permeable membrane.

Experiment to demonstrate osmosis



USES OF ROOTS TO PLANTS

- Roots fix the plant firmly in to the soil.
- They absorb water and mineral salts from the soil.
- Some roots store food for the plant.

Uses of roots to man

- Some roots act as food.
- Some roots are used as herbal medicine.

STEMS

A stem is a part of a plant which grows vertically upwards.

The stem has the following parts;

The growing tip of a plant called **the terminal bud**.

The angle between the leaf and the stem called **the axil**.

The axillary bud which grows into **a branch or flower**.

A node is the part on the stem where the leaf is fixed.

An internode; the distance between two nodes.

Note: The axillary bud is also called **the lateral bud**.

TYPES OF STEMS

They include

- Upright or erect stems.
- Underground stems
- Weak stems.

1. UPRIGHT OR ERECT STEMS.

These stems are found on either dicotyledonous or monocotyledonous plants.

They grow straight in space.

Examples include;

woody plants	pineapples
Beans	maize
Peas	soya beans

2. UNDERGROUND OR STORAGE STEMS

These are stems which grow underground and store food.

Examples include

- Stem tubers
- Rhizomes
- Bulbs
- Corms

CHARACTERISTICS OF UNDERGROUND STEMS.

They have scale leaves at nodes.

They have bud (eyes) or side shoots in the axil of scale leaves.

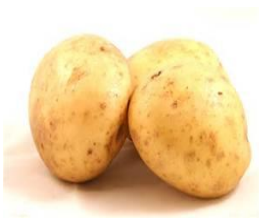
They have terminal buds which grow into a shoot.

A STEM TUBER

- These are swollen underground stems which store food.
- They have buds (eyes)
- They have scale leaves.
- Stem tubers are eaten as food.

Examples of stem tubers

Irish potato



White yams



B. Bulbs.

A bulb is a small underground stem with fleshy leaves which store food.

A stem of a bulb does not store food.

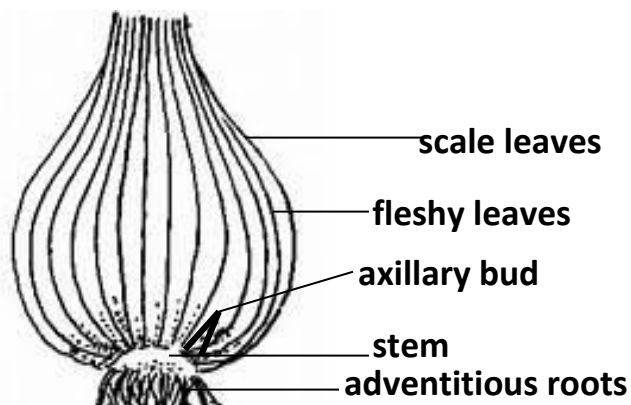
A stem of a bulb helps in attaching all the leaves together.

Bulbs are propagated using seeds or bulbs themselves.

Examples of bulbs

- onions
- shallots
- garlic
- chieves

Structure of a bulb (onion)



FUNCTIONS OF EACH PART

Foliage leaves: These leaves contain chlorophyll and make food.

Storage / Fleshy leaves: They store the manufactured food.

Axillary buds: They develop into new plants.

Stem: It holds all the leaves together.

Scale leaves: They protect the inside fleshy storage leaves.

C. Rhizomes:

A rhizome is a horizontal underground stem.

It has adventitious roots which grow from the stem and nodes.

Most rhizomes are swollen with stored food.

The stem is the rhizomes food storage organ.

Examples of rhizomes

- ginger
- zoysia
- tumeric
- cannalilly
- couch grass

D. Corms

A corm is a short vertical underground stem.

It is swollen with stored food.

It has scale leaves, axillary buds and adventitious roots.

Examples of corms

- Coco –yams
- gladiolus.

3. Weak stems.

These are weak stems which cannot support themselves upright.

Qn: Why do plants with weak stems climb others?

- To get enough sunlight.

Groups of weak stems

Climbing stems

Creeping stems

WAYS HOW PLANTS WITH WEAK STEMS CLIMB OTHERS

They include:

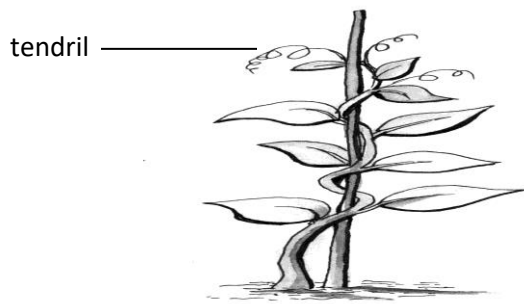
1. By using tendrils

The lateral bud of a plant or the leaf tip develops into a tendril.

Examples of plants which use tendrils.

- Passion fruits
- gourds
- cowpeas
- pumpkins
- cucumber

Illustration

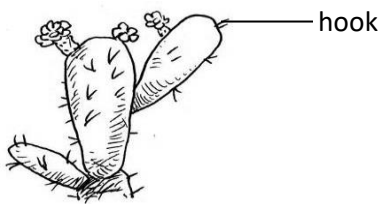


2. By using hooks

Some plants have downward pointing thorns.

The thorns prevent the plant from slipping down the other plant it is climbing.

Illustration



3. By twining or clasping.

Plants clasp their stems around a support.



Examples of plants that clasp.

- beans
- morning glory
- yams

Creeping stems (runners)

These are weak stems that grow on the ground

They have nodes with adventitious roots

Examples of plants with creeping stems

Pumpkin

Wondering Jew

PLANT PROPAGATION

Plant propagation is the way how some plants can be grown.

Some plants are propagated by using their stems or any part of the parent plant.

WAYS HOW SOME PLANTS ARE PROPAGATED.

Bulbs (onions) : by planting onions themselves or using seeds

Rhizomes: by planting the stem of the rhizome itself.

Corms: by planting the stem of the corm itself.

Stem tubers: By planting the stem tubers themselves.

Plants propagated by stem cutting.

- Cassava plant
- rose plant
- sweet potato plant
- NB;sweet potatoes can also be propagated using **potato vines**
 - **Sugarcane** can also be propagated by planting **setts**
- hibiscus flowers
- sugarcane plant

Plants propagated by suckers

- bananas
- pineapples/crown/slips
- sisal
- sugarcane

FUNCTIONS OF A STEM TO A PLANT

- They hold the leaves on a plant.
- They hold the flowers for proper pollination.
- They hold the fruits for proper dispersal of seeds.
- Some stems store food for some plants.

USES OF STEMS TO ANIMALS.

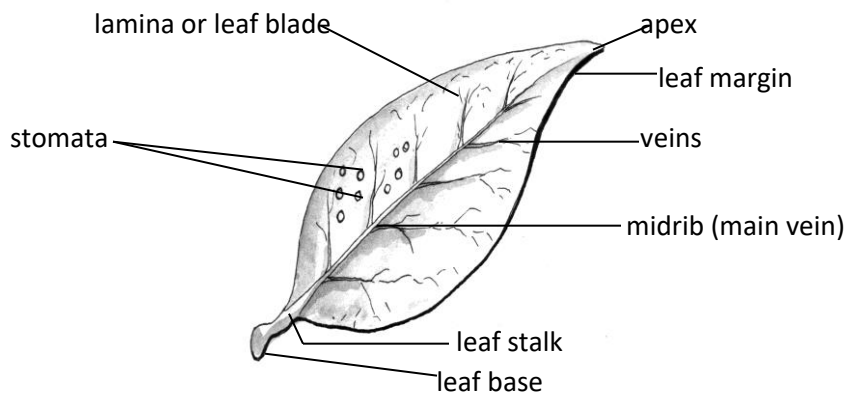
- Most stems are used for timber and firewood.
- Some stems are used as herbal medicines.
- Stems are used as food for animals.

LEAVES

A leaf is a green flat part of a plant that grows from the branches or stems of a plant.

Leaves grow in various shapes.

Parts of a leaf



Functions of each part

Veins: supply water and mineral salts to other parts of the leaf.

Leaf stalk: this attaches a leaf to the branch.

Stomata: allow gaseous exchange

Leaf venation.

Leaf venation is the arrangement of veins in a leaf.

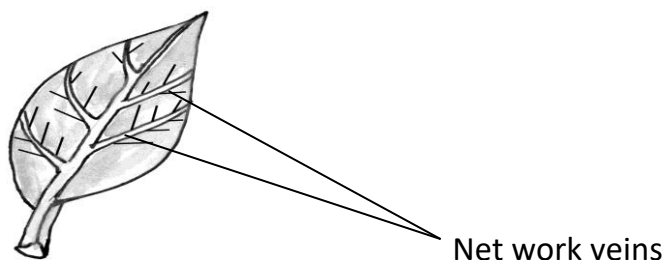
Types of leaf venation

- Network venation
- Parallel venation.

NET WORK VENATION

The leaf has veins made like a net.

Illustration.



Network venation is found in leaves of dicotyledonous plants.

e.g beans , hibiscus flower, peas.

Parallel venation

The veins in a leaf run from the leaf stalk to the apex of the leaf in a parallel form.

Parallel venation is found in leaves of monocotyledonous plants like

Maize plants, millet plants, sugarcane plants, rice plants, grass, wheat plants.

TYPES OF LEAVES

1. Simple leaves
2. Compound leaves

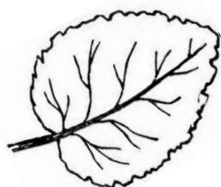
SIMPLE LEAVES

A simple leaf is a leaf with one leaf blade and one leaf stalk.

Examples of simple leaves

- ✓ Simple serrated leaf
- ✓ Simple lobed leaf
- ✓ Simple entire
- ✓ Simple divided entire
- ✓ Simple palmate
- ✓ Monocotyledonous plant leaf

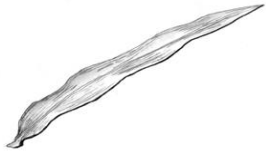
(a) Simple serrated



(b) Simple divided entire

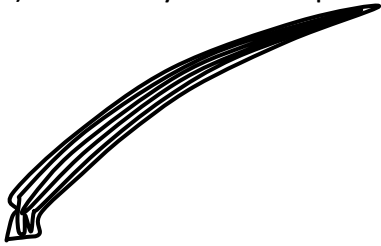


(c) Simple lobed



(d) simple palmate

(e) Monocotyledonous plant leaf [simple lanciolate]



Compound leaves

A compound leaf is a leaf with many leaflets.
The leaflets are divided at original leaf stalk.
Each leaflet has its own small stalk called **ranchis**.

Examples of compound leaves

- compound pinnate leaf
- compound bipinnate leaf
- compound trifoliate leaf
- compound digitate leaf

Illustration

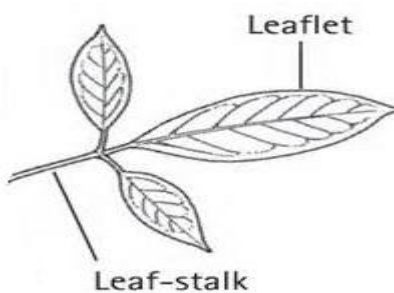
Compound pinnate



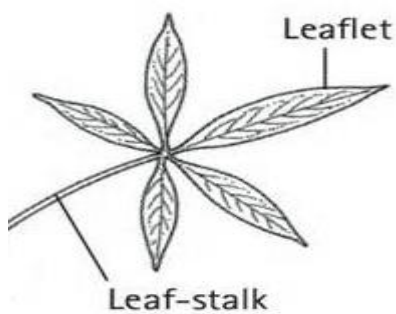
Compound bipinnate



Compound trifoliate



Compound digitate



Functions of leaves to plants

- Leaves make food for the plant.
- Leaves help a plant to carry out transpiration.
- Some leaves store food and water for the plant e.g. onions, bryophyllum
- Some leaves are used for propagation e.g. bryophyllum

Uses of leaves to people

- ✓ Some leaves are eaten as food e.g. amaranthus.
- ✓ Some leaves are used as herbal medicine
- ✓ Some leaves are used for plant propagation.
- ✓ Some leaves are used to thatch houses.

Processes that take place in leaves

1. Photosynthesis
2. Transpiration

PHOTOSYNTHESIS

Photosynthesis is the process by which plants make their own food.

The food made by plants is known as **starch**.

“Photo” means light while **synthesis** means making or building up.

The raw materials for photosynthesis are **water** and **carbondioxide**

The byproduct of photosynthesis are **oxygen**.

Conditions necessary for Photosynthesis

- Chlorophyll
- sunlight

Chlorophyll

Chlorophyll is the green colouring matter in leaves.

Chlorophyll helps to trap sunlight from the sun.

Adaptation of leaves to photosynthesis

- Leaves have chlorophyll which trap sunlight during photosynthesis
- Some leaves are broad and large.

TRANSPIRATION

Transpiration is the process by which plants lose water in form of water vapour to the atmosphere through the stomata.

The stomata are small holes found on leaves

FACTORS WHICH AFFECT THE RATE OF TRANSPIRATION

- Temperature
- Large surface area of the leaf
- Light intensity
- Humidity
- Wind

Temperature: Plants lose a lot of water on a hot day than a cool day

Light intensity: It increases the rate of water loss.

The stomata are open during day and closed at night

Wind: The rate of transpiration is very high when it is windy because more water vapour is blown away from the leaf surface.

Large surface area of the leaf: This increases the rate at which water is lost by the number of stomata it may have.

Humidity: It is the amount of water vapour in the atmosphere

High humidity, low transpiration and low humidity, high transpiration

Stomata; The greater the number of stomata, the greater the rate of transpiration

ways how plants increase the rate of transpiration

- By developing many leaves

IMPORTANCE OF TRANSPIRATION

- Transpiration helps plants to absorb more water and mineral salts from the soil.
- It helps in cooling the plants.

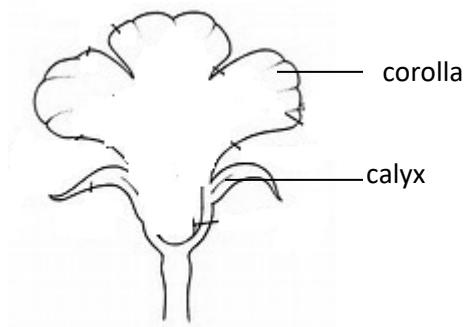
HOW PLANTS REDUCE THE RATE OF TRANSPIRATION.

- By producing a layer of wax by the leaves to cover the stomata.
- Shedding leaves by some plants during dry season
- Some plants reduce the size of their leaves to thorns e.g cactus plants.

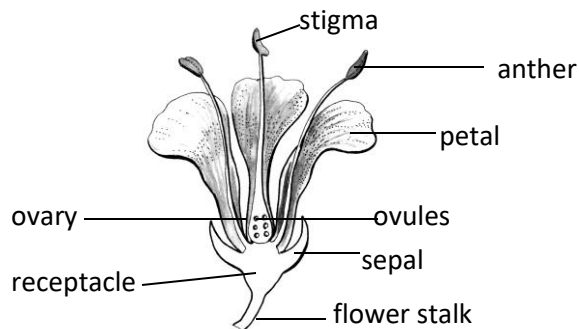
FLOWERS

- A flower is a reproductive part of a flowering plant.
- It is where reproductive cells (gametes) are produced.
- A flower helps to produce fruits and seeds.

The external structure of a flower



The internal structure of a flower



FUNCTIONS OF EACH PART

Petals

A group of petals on a flower is called **corolla**.

Petals are brightly coloured to attract pollinators like birds, insects and animals.

Insects, birds and animals feed on nectar.

Petals have nectaries or nectar glands at their base.

Nectary glands produce a sweet juice called **nectar**.

Pistil or Carpel

The pistil is the female part of a flower

It is made up of three main parts; namely

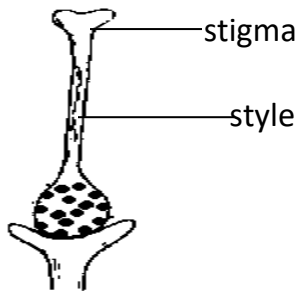
Ovary; It contains undeveloped seeds called ovules.

An ovule is a female gamete

Stigma: It receives pollen grains from the anthers.

Style: It holds the stigma in position.

Illustration



C

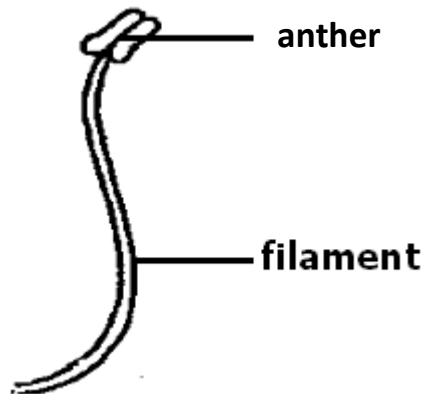
The stamen is the male part of a flower.

It is made up of the anther head and filament.

The anther head produces and stores pollen grains.

The filament supports the anther head

Illustration



D. Sepals

A group of sepals is called **calyx**.

Sepals protect the flower during the bud stage.

E. Flower stalk

It holds the flower in a position for easy pollination

POLLINATION

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

TYPES OF POLLINATION

Self pollination

Cross pollination

Self pollination

This is the transfer of pollen grains from the anthers of a flower to the stigma of the same flower or another flower on the same plant.

Illustration



HOW THE FLOWER IS ADAPTED (SUITED) FOR SELF POLLINATION.

The anthers and stigma mature at the same time e.g. the cornifers.

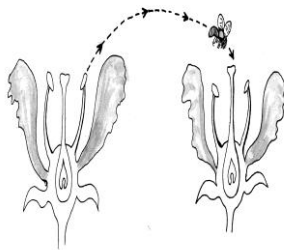
The flower remains closed until self pollination has taken place e.g. the conifers

The flower is hermaphrodite i.e. it has both male and female reproductive parts.

Cross pollination

This is the transfer of pollen grains from the anthers of a flower to the stigma of another flower on another plant of the same species.

Illustration



HOW THE FLOWER IS ADOPTED (SUITED) FOR CROSS POLLINATION.

- The male and female flowers occurs on the same plant e.g. in maize and coconut plants.
- The male and female flowers occur on separate plants e.g. in pawpaws.
- The male and female parts mature at different times i.e. the stamen may mature first or the pistil.

The pollen grains cannot germinate on the stigma of the same flower e.g. in passion fruits.

AGENTS OF POLLINATION

Agents of pollination are things responsible for the transfer of pollen grains to the stigma.

Agents of pollination

Insects ; e.g bees, beetles, butterflies, moths,

- wind
- water
- animals e.g bats
- Birds e.g sunbird, it has a long curved beak.
- Moths pollinate flowers at night

How?

By detecting the scent of flowers.

CHARACTERISTICS OF INSECT POLLINATED FLOWERS

- They have brightly coloured petals.
- They have nectar.
- They are well scented.
- They are large and seen easily
- They have broad sticky stigma.
- They have large, rough and heavy pollen grains
- The anthers produce few pollen grains.
- The stamen have short filaments.

CHARACTERISTICS OF WIND POLLINATED FLOWERS.

The flowers are small and not easily seen.

The petals have dull colours.

The flowers do not produce nectar.

They produce a lot of pollen grains.

They have small, smooth and light pollen grains

They have long feathery stigma.

The flowers don't have scent

FERTILIZATION

Fertilization is the union or fusion of the male and female gametes to form a zygote.

Fertilization takes place in the ovary of a flower (plant)

In flowering plants, the male gametes are the **pollen grains** and the female gametes are the **ovules**.

NOTE: 1. A gamete is a reproductive cell.

2. After pollination, fertilization takes place.

3. After fertilization, ovules grow into seeds and the ovary grows into a fruit.

4. The calyx, corolla, stamen and style wither slowly and fall off.

5. In some flowers, the calyx may remain.

IMPORTANCE OF POLLINATION

Pollination allows fertilization to take place in farmers' crops.

Pollination allows high yield in farmers' harvest

USES OF FLOWERS TO MAN

- Flowers are used to get insecticides.
- They are used for decoration on various functions.
- They are used to get dye.
- Flowers are used to make perfumes.
- They serve as a source of income.

TROPISM

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

A stimulus is any change in the environment to which the plant is sensitive.

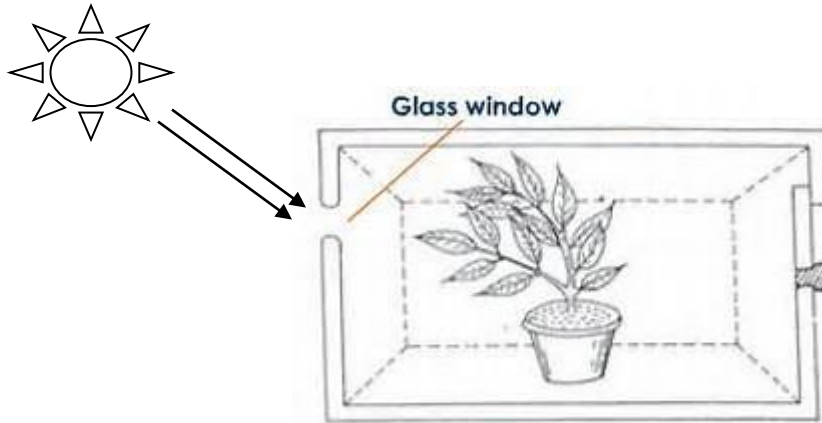
Each type of tropism is named according to the type of stimulus involved.

TYPES OF TROPISMS

- Phototropism
- Hydrotropism
- Chemotropism
- Geotropism
- Thigmotropism or haptotropism

Phototropism

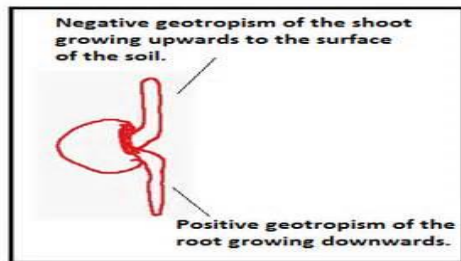
This is the growth movement (response) of a plant shoot towards light.



Geotropism

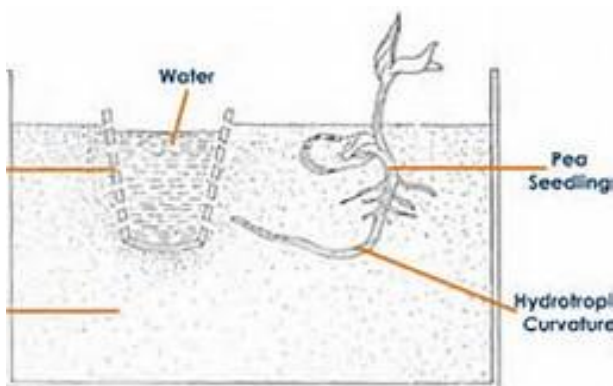
This is the growth movement (response) of plant roots towards the direction of the force of gravity.

Plant roots grow downwards due to the force of gravity.



Hydrotropism

This is the growth movement (response) of plants roots towards the source of water or moisture.



Thigmotropism

This is the growth movement (response) of certain parts of some plants in response to the stimulus of touch on one side.

This stimulus helps climbing plants to twine or clasp on other plants.

It also helps other plants to fold themselves when touched.

Chemotropism

This is the growth movement of plant parts in response to source of chemicals. e.g.

Pollen tubes grow towards the stigma through the style towards the ovary and finally towards the ovules.

This is due to chemicals in the ovules and stigma.

Summary

Tropism / response	Stimulus
Phototropism	Light
Geotropism	Force of gravity
Hydrotropism	Water or moisture
Thigmotropism or haptotropism	Touch
chemotropism	Chemicals other than water

SEEDS

A seed is a fertilized ovule

Classification of seeds

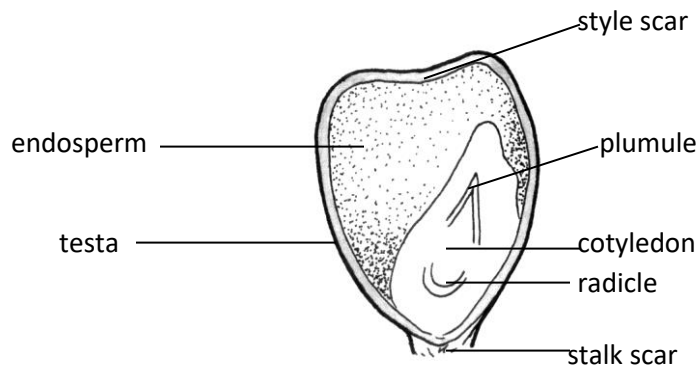
- a) Monocots
- b) dicots

Monocotyledonous seeds are seeds that have one cotyledon

Examples of monocotyledonous seeds

- maize
- millet
- sorghum
- barley
- rice

A structure of maize grain



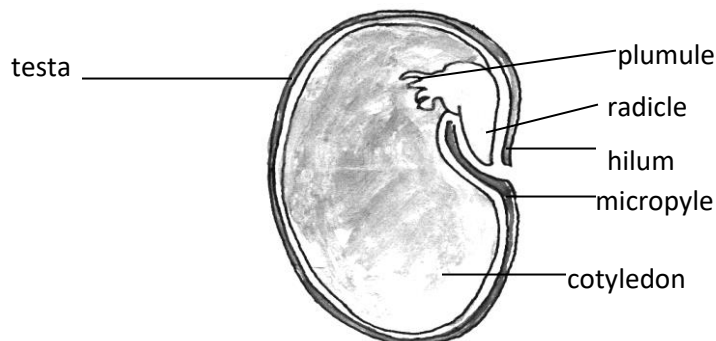
b) Dicotyledonous seeds

- These are seeds that have two cotyledons.

Examples include

- beans
- peas
- soya
- ground nuts

A structure of a bean seed



Functions of each part

1. **Plumule** – develops into shoot system
2. **Radicle** – develops into root system
3. **Testa** – protects the internal parts from damage.
4. **Cotyledon**- It stores food for the seed.

Cotyledon (maize) absorbs food nutrients from the endosperm and supply it to the embryo.

5. **Endosperm** stores food for the embryo
6. **Micropyle** – lets in water and air into the seed during germination
7. **Hilum** – it is a scar to which the seed /grain was attached

Seed Germination

- Germination is the development of a seed embryo into a young plant.
- A seedling is a young plant

Types of germination

- Epigeal germination

This is the type in which the cotyledon comes out of the ground.

A bean seed



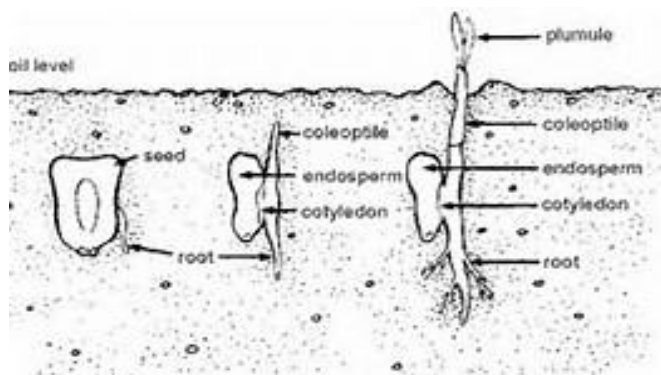
Steps undergone by a seed during germination

- The seed absorbs water and swells
- The radicle grows and pushes through the testa
- The radicle grows down wards and it is protected by the root cap
- Root hairs absorb water and mineral salts

- **Hypogeal germination**

This is type of germinations in which a cotyledon remains under ground.

A maize grain



Condition for germination

- Water
- Warmth
- Oxygen

GROWING CROPS

Groups of crops (categories of crops)

- Annual crops
- perennial crops
- Biennial crops

a) **Annual crops**: These are crops which mature within one year.

Examples of annual crops

- | | |
|--------------|---------------|
| - sun flower | - peas |
| - sorghum | - maize |
| - beans | - ground nuts |

b) **Perennial crops**: These are crops that take more than a year to mature.

Examples of perennial crops

- | | | |
|---------------|------------|---------------|
| - coffee crop | - tea crop | - banana crop |
|---------------|------------|---------------|

c) **Biennial crops**: These are crops that take two growing seasons to mature. e.g. carrots, wall flower,

Garden tools

These are tools used by farmers to carry out garden activities.

Common garden tools and their uses

- **Panga** – used for clearing bush, harvesting, cutting small branches
- **Hoe** – used for weeding, digging
- **Forked hoe** – for digging stony soil, removing roots stones in the garden
- **Rake** – for leveling soil, collecting grass, spreading manure
- **Trowel** – for transplanting seedlings
- **An axe** – used for cutting big trees
- **Watering can** – for watering or irrigating crops
- **Wheel barrow** – for transporting harvested food crops

Caring for garden tools

- storing garden tools in clean dry places
- painting garden tools
- cleaning them after use

CROP GROWING PRACTICES

- Clearing land: This is the first stage in a food path.
- Clearing land is done with the following tools
 - hoe
 - ox-panga
- **ploughing land**
 - It is done using a tractor, ox-pough, hoes, and forked hoe.
 - Ploughing the land is done to make the soil loose and soft
 - It makes the soil aerated
- **Planting**
 - This refers to putting seeds in holes and covering with soil.

Methods of planting

- **Row planting.** This is the planting of seed in holes in a line and covered with soil.
- **Broadcasting.** This is the planting of seeds by throwing them using the hand in a garden.

Crop growing practices.

a) Weeding is the removal of plants from an area where they are not wanted.

Examples of weeds.

- nut grass
- couch grass
- spear grass
- timothy grass

Dangers of weeds.

- They compete with crops for water and mineral salts
- Weeds are hiding places for crop pests.
- Weeds reduce space for crops to grow.
- Weeds lower crop yield.

Uses of weeds.

- For feeding some farm animals
- For thatching houses
- For mulching

Ways of controlling weeds.

- By uprooting and burning them
- By spraying with herbicides
- By mulching
- By cutting and burning them

b) Thinning.

Thinning is the removal of excess seedlings in the garden

Advantages of thinning crops

- It creates space for crops to grow
- It makes weeding easy
- It prevents overcrowding in seedlings
- It reduces competition for soil nutrients among plants.

Commonly thinned crops

- cotton
- millet
- sunflower
- maize
- banana

c) Mulching

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

Examples of mulches

- Dry banana leaves
- Dry grass
- Dry maize stalks

Advantages of mulching

- Mulching keeps moisture in the soil
- Mulching controls soil erosion
- Mulching adds humus in the soil making it fertile
- Mulching controls growth of weeds

NB; how does mulching conserve soil moisture?

Mulching prevents direct sun rays from reaching the soil to cause evaporation.

How does mulching improve soil fertility?

Mulches rot and form humus.

How does mulching control soil erosion?

By reducing the speed of running water.

Disadvantages of mulching

- Mulches can easily catch fire and burn crops.
- Mulches are hiding places for crop pests e.g. rats.
- Some mulches can turn into weeds

d) Pruning

- Pruning is the removal of unwanted parts of a plant.

Garden tools used for pruning

- secateurs
- pruning saw
- shears

The main garden tool used for pruning is called **secateur**

Reasons why crop farmers prune their crops

- To remove hiding places for crop pest
- To make harvesting easy
- To give space for weeding and spraying
- To reduce the weight of the plant

Plants which are pruned include

- | | |
|----------------|----------------|
| - orange plant | - coffee plant |
| - banana plant | - lemon plant |
| - tomato plant | |



Secateurs

CROP HARVESTING

- Harvesting is the collection of mature crops from the garden
- Harvesting is usually done in the dry season.

Reason; there is enough sunshine to dry harvested crops.

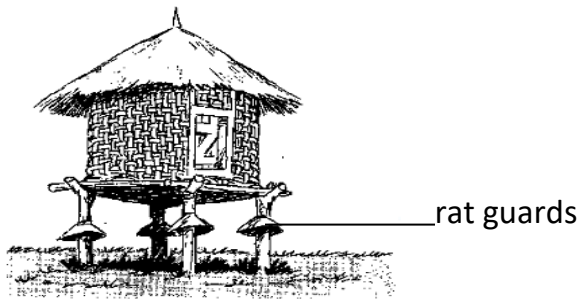
Methods of crop harvesting

- By uprooting using hands e.g. soya beans, beans, ground nuts
- By cutting using a panga e.g. sugar cane, bananas
- By digging out using a hoe e.g. cassava, sweet potatoes
- By picking using hands e.g. coffee, tomatoes, oranges

Storage

- This is the keeping of surplus food safely after harvesting
- Seeds and cereals after sun drying them, should be stored properly
- Other foods like cassava are sundried after harvesting to prevent them from rotting.
- The storage facility should be free from storage pests like rats, bean weevils etc

A storage facility (granary)



Reasons for storing food.

- To prevent wastage of food
- To sell it when there is good market
- To get what to eat in the dry season
- To keep some for planting in the next season

Conditions for proper storage of food

- The seeds or grains should be stored when they are dry
- Stores should be well ventilated
- The roofs of stores should not leak

NB; rat guards prevent rats from entering into the granary

Record keeping

- This is a practice where a farmer writes down all the activities done on the farm

Reasons why crop farmers keep records

- They enable a crop farmer to calculate profits and losses
- They enable a crop farmer to plan for his farm
- Records can be used to get a loan from the bank
- they are kept for future use
- Records enable the farmers to be taxed fairly by the government.

Crop pests

- A crop pest is a living organism which destroys crops
- They include: animals, birds, insects etc

Dangers of crop pests

- They reduce crop yields
- They lower the quality of crop yields
- They cause damage to crops

Signs of pest damage on crops

- Some leaves are partly eaten up or have holes
- Fruits develop dark spots
- Cut off buds
- Roots with some parts eaten away
- Seeds with holes

Pests of leguminous crops

Beans	<ul style="list-style-type: none">- Bean fly- American ball worm- bean aphid- bean bruchids- Cut worms- bean weevil
Ground nuts	<ul style="list-style-type: none">- millipedes- thrips- ants- termites- Aphids- squirrels
Cow peas	<ul style="list-style-type: none">- pod borer- blossom beetles- thrips- pod sucking insects

Pests for root tubers

Cassava	<ul style="list-style-type: none">- cassava white fly- rats- mices- squirrels
Sweet potatoes	<ul style="list-style-type: none">- sweet potato weevils- caterpillars- rats

Pests for cereal crops

Maize	<ul style="list-style-type: none">- maize stalk bore- maize weevils- monkeys
Rice	<ul style="list-style-type: none">- weaver birds- locusts

How to control crop pests

- By spraying crops with pesticides
- By putting scare crows in the garden.
- By using traps
- By practising crop rotation
- By weeding regularly

Crop diseases

Cassava	Cassava mosaic
Cotton	Leaf spot
Maize	Maize streak
Tomato	Tomato blight
G.nut	Rosette virus
Banana	Bacterial banana wilt

WEATHER CHANGES AROUND US

- Weather is the daily condition of the atmosphere of a place at a given time

Conditions of weather

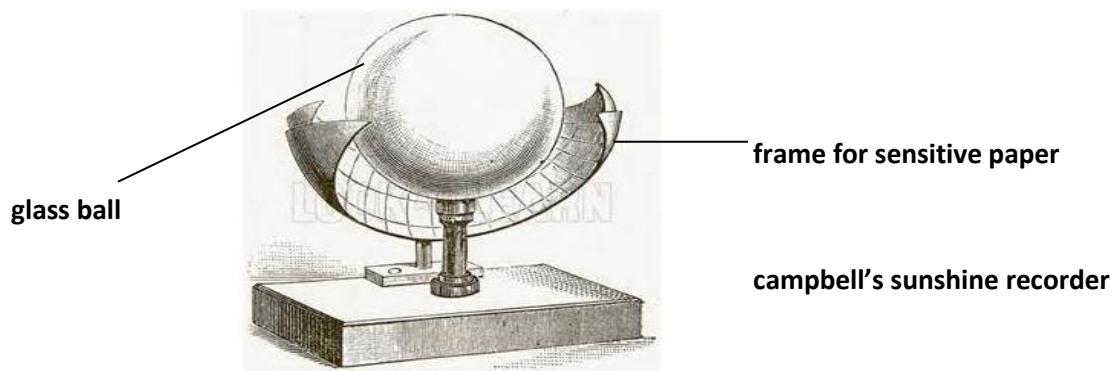
- sunny
- windy
- cloudy
- rainy

Elements of weather

- temperature
- humidity
- cloud cover
- sunshine
- Rainfall

- SUNSHINE

The amount of sunshine shone is measured using a **sunshine recorder**



Advantages/uses of sunshine

- Sunshine dries our wet clothes
- It helps in the formation of rain
- it dries our harvested crops
- it also makes our crops ready for harvest
- It helps to kill some germs

Disadvantages of too much sunshine

- Too much sunshine makes the day very hot.
- It can make soil dry.
- It makes water bodies to dry.
- It makes plants to dry in the garden.

Wind

Wind is moving air.

Wind vane is used to show the direction of wind.

Anemometer is used to measure the speed of wind.

It has cups which trap wind and rotate as wind blows.

Advantages of wind

- Wind helps to bring cold air in a warm place.
- It helps in pollination
- It aids winnowing
- It helps in the formation of rain.
- It helps to dry wet clothes.
- Wind helps in seed dispersal.

Disadvantages of wind

- Wind spreads germs that cause diseases.
- It takes away top soil
- Strong wind throws down houses, buildings and trees.
- Strong wind causes storms on land and on water bodies.

Rainfall

Rain is the water falling in separate drops from the clouds.

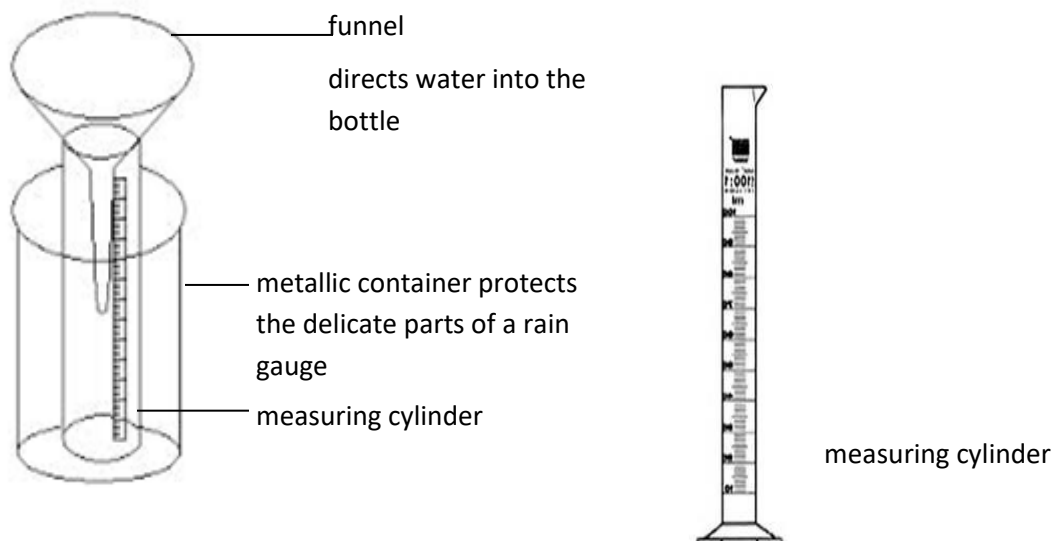
Rainfall is the amount of rain water that falls in a certain area at a certain time.

Types of rainfall

- Convectional rainfall.
- Cyclonic rainfall.
- Relief rainfall

Rainfall is measured by an instrument called a rain gauge.

Illustration



IMPORTANCE OF RAINFALL

- Rain is the main source of water.
- It cools the temperature of a place.
- It provides water for plant growth and photosynthesis.
- It helps crops to grow quickly.

DISADVANTAGES OF RAINFALL.

- Too much rainfall destroys crops.
- It leads to floods.
- Construction of roads, house becomes difficulty.
- It destroys property.

TEMPERATURE

Temperature is the degree of coldness or hotness of a place or body.

Temperature is measured using a **thermometer**

A thermometer has the Celsius and Fahrenheit scales.

Types of thermometers

- Clinical thermometer
- Minimum and maximum thermometer
- Wall thermometer
- Ordinary thermometer

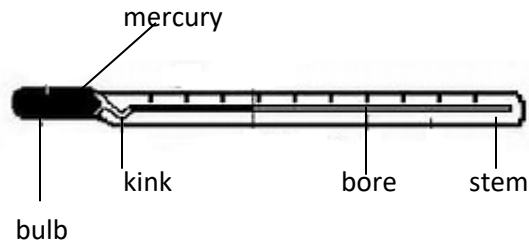
Clinical thermometer

It is used to measure the temperature of a human body.

It can be placed in the following places;

- in the armpits
- in the anus
- in the vagina
- in the mouth under the tongue

Diagram of a clinical thermometer.



Kink: It prevents the back flow of mercury

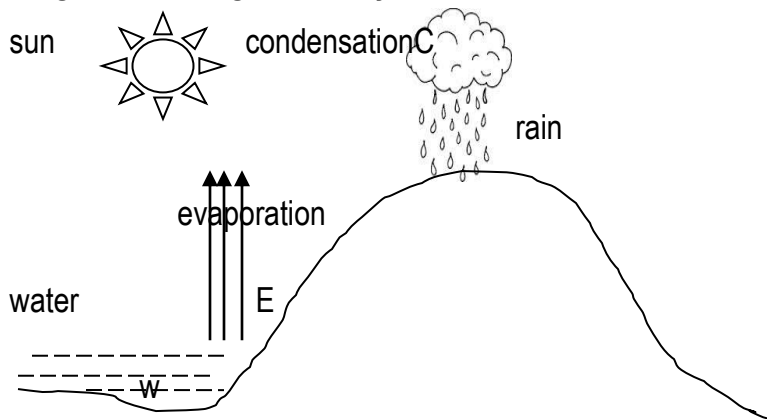
WATER CYCLE

This is the process by which rain is formed.

Processes involved in the water cycle.

- Evaporation
- Transpiration
- Condensation

Diagram showing a water cycle



C – Condensation

E – Evaporation

T – Transpiration

W – Water body (lake or river)

Nimbus clouds provide us with rain.

Humidity

Humidity is the amount of water vapour in the atmosphere.

- **A hygrometer** is used to measure humidity.

- Warm air can hold more moisture than cold air.
- When the warm air fails to hold excess moisture, this moisture comes down as dew.

Clouds

Clouds are made up of many droplets of water vapour in the atmosphere

Types of clouds

- | | |
|-----------------|-----------|
| - Nimbus | - cirrus |
| - Cumulus | - stratus |
| - Cumulo nimbus | |

Weather station

- Is a place where weather conditions are measured and recorded.

PERSONAL HYGIENE

- General cleanliness of the body and things we use on it

Activities done in personal hygiene

- | | |
|--|--------------------|
| - bathing daily | - washing hands |
| - cutting long finger nails short | - washing the face |
| - brushing, drying and ironing clothes | |

Items used for keeping our bodies clean

- | | |
|------------------|---------------|
| - bathing sponge | - toothbrush |
| - water | - nail cutter |
| - tooth paste | - towel |
| - comb | - soap |

Reasons for keeping our body clean

- To prevent bad body smell.
- To remove germs from the body.
- To remove dirt on the body.

Ways of keeping our bedding and clothes clean

- washing them clean
- drying and ironing them
- keeping them in dust free areas

Reasons of keeping beddings and clothing clean

- To prevent bad smell
- To prevent parasites such as lice, bed bugs from breeding in them.
- To reduce the spread of germs