

TERM ONE
THEME : THE WORLD OF LIVING THINGS
TOPIC : CLASSIFICATION OF ANIMALS

What are living things?

- *Living things are things that have life.*

Mention the main groups of living things.

- *Plants*
- *animals*

Give the examples of living things.

- *Plants*
- *Insects*
- *Birds*
- *Human beings*
- *Worms etc.*

Mention any two characteristics of living things.

- *Living things respire.*
- *Living things feed.*
- *Living things respond to stimuli.*
- *Living things grow.*
- *Living things reproduce.*
- *Living things excrete.*
- *Living things move*

What do you understand by Classification of living things?

- *Classification is the grouping of things according to common characteristics and features.*

Name any two features used in classification of living things.

- *Number of legs*
- *Ways of breathing*
- *Response to stimuli*
- *Colour*
- *Size*
- *Body divisions*
- *Ways of movement*
- *Hair on the body*
- *Shape*
- *Adaptation to the environment*
- *How they get food.*

State any two reasons for classifying living things.

- *Makes it easy for us to identify them.*
- *Makes it easy to name them.*

Note:

Living things are classified into five groups called **kingdoms**.

- *Animal kingdom*
- *Plant kingdom*
- *monerans*
- *Fungi kingdom*
- *prototista kingdom(prototists)*

ANIMAL KINGDOM

Give any two characteristics of animals.

- *Animals are multicellular.*
- *Animals cannot make their own food because they do not have chlorophyll*

- They feed on already made food.
- Animal cells have a cell membrane.

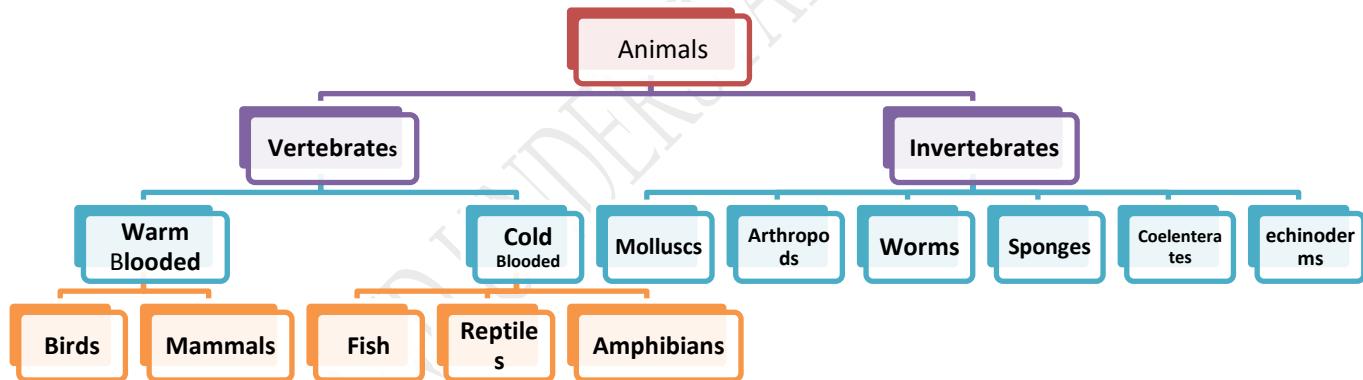
State the differences between plants and animals.

Plants	Animals
<ul style="list-style-type: none"> ○ Make their own food ○ Green plants contain chlorophyll ○ Growth occurs only at the tips of roots and shoots ○ React slowly to stimuli ○ Continue growing throughout their life 	<ul style="list-style-type: none"> ○ Feed on already made food. ○ Don't have chlorophyll ○ Growth occurs equally on all parts of the body ○ React quickly to external stimuli ○ Stop growing long before their death

Mention two groups of animals.

- Vertebrates
- Invertebrates

Classification of animals



What are Vertebrates?

- Vertebrates are animals with backbones.

Give any two characteristics of vertebrates.

- They have an Endo (internal) skeleton.
- They have a large brain protected by the skull (cranium).
- They have back bones.

NB: Vertebrates are also grouped into two;

- Warm blooded (homoeothermic or homoeothermic)

- Cold blooded (poikilothermic)

What are Warm blooded (homoeothermic)?

- Are animals that have a constant body temperature.

Mention two examples of warm blooded animals.

- ✓ Mammals
- ✓ Birds

What are Cold blooded animals (poikilothermic)?

- Are animals whose body temperature changes according to the surrounding.

Give two examples of cold blooded animals.

- ✓ Fish
- ✓ Reptiles
- ✓ Amphibians

1. Mammals

- Mammals are groups of vertebrates with mammary glands.
- Mammary means breasts.

Mention any two characteristics of mammals.

- They are warm blooded.
- Their bodies are covered with fur: **prevent heat loss from the body.**
- All mammals care for their young ones.
- They give birth to live young ones except the egg laying mammals.
- They feed their young ones on milk from their mammary glands.
- They breathe through lungs.
- They undergo internal fertilization.

State the main characteristics of mammals.

- They give birth to live young ones.
- Their bodies are covered with fur.
- Have mammary glands.

Name the groups of mammals.

- Primates (flexibly fingered mammals)
- Cetaceans (sea mammals)
- Carnivores (flesh eating mammals)
- Ungulates (hoofed mammals)
- Rodents (gnawing mammals)
- Marsupials (pouched mammals)
- Insectivores (insect eating mammals)
- Chiroptera (flying mammals)
- Monotremes (egg laying mammals)

A. Primates

- Primates are mammals with a well-developed brain.
- Primates are the most advanced group of mammals.

Mention any three Characteristics of primates.

- *They have a well-developed brain.*
 - *They have five fingers on their hands and five toes on their feet.*
 - *They have five fingers on each hand and five toes on each foot.*
 - *They are omnivores i.e. feed on both meat and vegetation.*
 - *They have four sets of teeth.*

Name two examples of primates.

- *Man*
 - *Gorilla*
 - *Baboon*
 - *Monkeys*
 - *Bush baby*
 - *Chimpanzee*

Mention two groups of even toed ungulates.

- *Ruminants*
 - *Non-ruminants*

What are Ruminants?

- Are ungulates that chew cud and have four chambered stomachs.

What are Non-ruminants?

- Are ungulates that have a single stomach and do not chew cud.

What are Carnivores (flesh eating mammals)?

- They are mammals which feed on flesh (meat).
 - They are also called **predating mammals**.

Give any two Characteristics of carnivores.

- They have long stout legs: **for running very fast.**
 - They have well-developed canines for **tearing flesh.**
 - They have strong curved claws for **grabbing prey.**

What are Insectivores (insect eating mammals)?

- These are mammals which feed on insects.

Identify two Characteristics of insect eating mammals.

- They have a high sense of smell.
 - They have strong claws for digging the ground to get food.
 - They mostly hunt at night.

Name the examples of insect eating mammals.

- hedgehog
 - moles
 - ant bears

Chiroptera (flying mammals)

- They are mammals that move by flying.

Mention two characteristics of flying mammals.

- Their fore limbs are modified into wings.
 - They are nocturnal.
 - They can find their food at night using echoes.
 - They give birth to live young ones.
 - Have mammary glands.

NB: Bats are the major examples of flying mammals.

Moths, hedgehogs are other examples of nocturnal animals.

Marsupials (pouched mammals)

- Marsupials are mammals with a pouch.
- Pouch is used to carry its young one until it matures.
- Have breasts inside the pouch.

Give two examples of pouched mammals.

- Kangaroo
- Wallabies
- Koala bear
- wombat

B. Monotremes (Egg laying mammals)

- These are mammals which lay eggs.
- Feed their young ones on milk from their mammary glands.

Note:

- They are regarded as the most primitive mammals because;
 - ✓ They have characteristics of reptiles, birds and mammals.
 - ✓ They lay eggs and have beaks similar to those of birds.
 - ✓ They feed their young ones on milk from their mammary glands.

Examples of egg laying mammals:

- Duck billed platypus
- Spiny ant eater(**echidna**)

C. Cetaceans (sea mammals)

- Cetaceans are mammals that live in the sea and oceans.
- They have a layer of fats called **blubber** which keep them warm in water.

Mention any two characteristics of cetaceans.

- They live in seas.
- They breathe by means of lungs.
- Have a high level of intelligence next to primates.

Name two examples include.

- | | | |
|----------|------------|-------------|
| • Whales | • Dolphins | • Seals |
| • otter | • walrus | • Porpoises |

Give any two importance of mammals to man.

- Some ungulates and rodents are a source of food to man
- Some mammals are used for transport.
- Some mammals provide raw materials such as hides and skins, horns and tusks for industries.
- Oxen are used to plough land for man.

- They are tourist attractions
- Some rodents can be used to reduce or kill pests on a farm.

Mention two dangers of mammals.

- Some rodents are crop pests.
- Dogs and cats are diseases vectors.

2. Birds

State two characteristics of birds

- Have streamlined bodies.
- Their bodies are covered with feathers.
- Have scales on their legs.
- They are warm blooded (**homoeothermic**).
- They breathe by means of lungs
- They take care of their young ones.
- They undergo internal fertilization.

Mention the groups of birds.

- | | |
|---|---|
| <ul style="list-style-type: none"> • Swimming birds • Climbing birds • Birds of prey • Perching birds | <ul style="list-style-type: none"> • Scratching birds • Wading birds • Scavenger birds • Flightless birds |
|---|---|

A. Birds of prey

- These are birds which hunt and kill prey.

Give any two Characteristics of birds of prey.

- They feed on flesh (meat).
- They have strong eye sight to spot their prey even at a distance.
- They have strong, sharp, hooked beaks for tearing their prey.
- They have strong, sharp curved talons for gripping and killing their prey.
- Do not have a crop in their alimentary canal.

Why are birds of prey not having a crop in their alimentary canal?

- They feed on already moistened food.

Give any two examples of birds of prey.

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • Hawks • Vultures. • eagles | <ul style="list-style-type: none"> • secretary birds • owls • kites | <ul style="list-style-type: none"> • falcons |
|--|--|---|

Draw a beak and the foot of the bird of prey.



B. Perching birds

- Have three toes pointing forward one back ward.
- This helps them to grasp twigs and small branches.

Groups of perching birds

1. Seed eaters

- Are perching birds that feed on seeds.
- Have strong conical beaks for breaking seeds.

Examples include;

- pigeons,
- doves
- weaverbirds

Structure of a seed eater



2. Insect eaters

- These are perching birds that feed on insects.
- Some have wide beaks when open for catching insects in flight.
- Some have short beaks for picking insects.

Mention any two Examples of insect eaters.

- Sparrows
- Robins
- Bee eaters
- Swallows
- Swifts

NB: Swallows and swifts have short wide open beaks to catch insects even when flying.

Structure of an insect eater

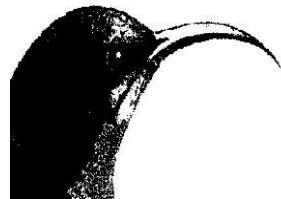


3. Nectar suckers

- These are perching birds that feed on nectar.
- They have thin long slender beaks for sucking nectar from flowers.

Examples include; sun bird and humming bird.

Structure of beak



4. Fruit eaters

- These are perching birds that feed on fruits only.
- They have strong long beaks like a horn bill.

C. Scratching birds

- These are groups of birds that scratch the ground searching for food.

- They have strong blunt claws for scratching the ground.
- Scratching birds mostly feed on insects, worms, small grains etc.
- These birds are unable to fly high because: **their bones contain marrow that makes them heavy.**

Examples of scratching birds

- Domestic fowls e.g.
 - ✓ Chicken,
 - ✓ Turkey,
 - ✓ Guinea fowl.

Structure of beak



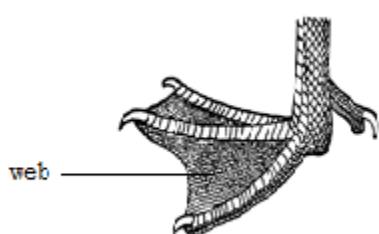
D. Swimming birds

- These are birds with fully webbed feet: **for swimming.**
- They have a flat broad breast bone: **for floating on water.**
- They have flat spoon shaped beaks: **to help them to sieve and scoop food from mud.**
- Their skin has many oil glands: **that produce oil to make feathers water proof.**

Examples of swimming birds

- Ducks
- Pelicans
- Sea gulls
- Geese
- Swans
- King fisher

Structure of beak and feet



E. Wading birds

- These are groups of birds that find their food in water.
- They have long thin legs:**to prevent them from sinking in water.**
- They have partly webbed feet: **to enable them walk in mud.**

- They have long slender necks: **for swinging the head while spearing food.**

Examples of wading birds

- flamingoes
- herons
- ibis
- crested crane

Structure of beak and feet



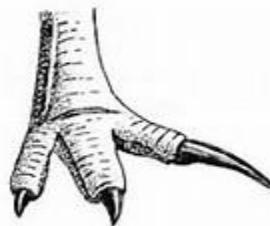
F. Flightless birds or walking birds

- These birds that are unable to fly but can run very fast.
- They have weak and small wings compared to their body weight.
- They have compact bones filled with bone marrow.
- Do not have flight feathers.

Examples of flightless birds

- Ostrich
- Penguin
- Kiwi
- Emu

Foot of an ostrich



NB: An ostrich is the largest and fastest flightless bird

Penguins have **wings** and **feet** modified for swimming.

G. Climbing birds

- They are able to climb or walk on tree trunks.
- They have two toes pointing forward and two toes pointing back ward: **to enable them climb trees easily.**
- They have short, curved and strong beaks.

Examples

1. A parrot has a short strong and curved beak **which is used for holding and cracking seeds and nuts.**

Structure of beak and feet



2. Wood pecker

- It has a strong pointed beak for:
- For probing insects.
- For making holes in barks of trees.



H. Scavenger birds

- These are birds that feed on **Carrion**.
- Have strong curved beaks to enable them tear flesh.

NB: They help to clean the environment by feeding on carrion.

Identify the examples of scavenger birds

- vultures,
- crows,
- marabou storks

Structure of beak and feet



Mention any ways in which birds are adapted to flying.

- They are streamlined to reduce friction in air.
- They have hollow bones which help to reduce weight.
- Their front limbs are modified into wings.
- They have a nictitating membrane which cover the eyes and protect them against moving air during flight.
- They have flight feathers.
- They have no pinna to obstruct the flow of air.

- They have hollow air sacs from the lungs.

Suggest any two importance of birds.

- They are a source of food to man and animals.
- Their feathers can be used for decoration on hats, hand bags.
- Their bones can be used for making glue.
- Birds are a source of income to farmers.
- Some birds like sun birds pollinate flowers when collecting nectar.
- Some bird like vultures, crows and marabou storks clean our environment

Mention any two dangers of birds.

- Many birds destroy farmer's crops.
- Some birds cause accidents on run ways at airports.
- They make a lot of noise especially weaver birds
- They keep vectors like fleas and mites.
- Some birds of prey such as kites and eagles kill and eat the chicks of domestic birds.

THE COLD BLOODED VERTEBRATES

- These are vertebrates whose body temperature changes according to the surrounding.

Name four groups of cold blooded animals.

- Reptiles
- Amphibians
- Fish

Give any three Common characteristics of reptiles.

- | | |
|--|---|
| • They have back bones. | hearts |
| • They all move by crawling along the ground | • They reproduce by laying eggs. |
| • Their bodies are covered with scales | • They are poikilothermic (cold blooded) |
| • Their eggs undergo internal fertilization. | • They do not take care of their young ones |
| • They breathe by means of lungs. | • They have a set of teeth of the same kind |
| • They have three chambered | |

a) Snakes

- Are reptiles that are limbless.

Characteristics of snakes

- They are limbless.
- They are carnivorous animals.
- Do not have eyelids.
- They have a forked tongue: **for smelling and tasting food.**
- They moult: **to grow.**
- They move by gliding.

Features of snakes.

- They have a forked tongue: **for smelling and tasting food.**
- Have teeth curved inwards: **to prevent the prey from escaping.**
- Do not chew food but just swallow it because: **they do not have molar and pre-molar teeth for chewing.**

Groups of snakes

- Poisonous snakes
- Non-poisonous snakes
- Constrictors

i. Poisonous snake

- These are snakes that produce venom.
- They have fangs: **for injecting venom in the prey.**
- They have triangular shaped heads.
- Have dark scaring colours.

Examples of poisonous snakes

1. Cobras
2. Gabon Viper
3. Black Mamba
4. Puff adder.

ii. Non-poisonous snakes

- These are snakes that do not produce venom.
- They do not have fangs.
- They have slender heads.
- They move swiftly to run away from enemies.

Examples include;

- house snakes,
- grass snakes,
- tree snake

iii. Constrictors

- They are big non-poisonous snakes with strong muscles.
- They have strong muscles: **for squeezing and crushing prey.**
- They have flexible jaws: **to enable them swallow larger prey.**

Examples include;

- Python, king snakes
- Boas
- Anaconda.

Identifying marks of a poisonous and non-poisonous snake.

First aid for snake bites

- Rest the victim in one place
- Clean the bitten part with methylated spirit.
- Tie a piece of cloth just above the bitten part and apply a black stone.
- Take the victim to a nearby health Centre.

Describe first aid for a snake bite in one sentence.

- Tie a piece of cloth just above the bitten part.

Qn: why do we tie a piece of cloth just above the bitten part?

- To prevent quick spread of venom in the body.

Qn; How can the victim of a snake bite be carried to a nearby health Centre?

- Using a stretcher.
- Two people carry
- Piggy back.

How to control snake bites.

- ❖ Slashing bushes in the compound.
- ❖ Covering holes in houses and compound.

Importance of snakes to man

- They provide skin that can be used for making drum membranes, shoes, belts, hand bags.
- They eat pests and vectors.
- Venom is used to make anti-venom drugs.

Lizards

- Are reptile with limbs and movable eyelids.
- Their tongues are fleshy.
- They have movable eyelids.
- Their heads are flat and triangular.

Examples of lizards;

1. Geckoes

- These are small and yellowish-brown.
- They have short and broad tongues.
- They can cast off their tails and develop new ones.
- They feed on small insects and worms.
- They lay eggs in cracks and holes in buildings where they mainly live.
- They have suction pads on their feet: **which enable them to move upside down on ceilings.**
- They are useful because they feed on mosquitoes and other harmful insects.

2. Chameleon

- They have large heads and protruding eyes.
- The eyes can work independently of each other.
- The feet and tails are well developed for catching and gripping small twigs and branches of trees.
- They have long sticky tongues which are sticky used to trap insects.
- They change colour according to the surrounding.
- for protection and get food.

Tortoises and turtles

- Have hard shells on their bodies for protection.
- Tortoises are land animals that feed on grass and insects.

- Have four limbs that end in clawed toes.
- Have sharp cutting edges in their jaws instead of teeth.
- They reproduce by laying eggs which are fertilized internally.
- Terrapins are a kind of turtles that live in fresh water.

Crocodiles and alligator

- They have a strong tail.
- They have long strong jaws
- The female lays hard-shelled eggs and covers them in sand or mud.
- They are covered with scales.

Qn. What is the use of a tail of a crocodile?

- For swimming
- For defense

Note: A crocodile uses a tail and teeth for protection.

Uses of crocodiles and alligators to man

- We get skins for making shoes, bags and belts.
- Man can eat their meat.

2. Amphibians

- Are animals that live both on land in water.

Characteristics of amphibians:

- They live both in water and on land.
- They are poikilothermic
- Have two pairs of limbs (hind limbs are fully webbed to enable them to swim).
- Their eggs undergo external fertilization.
- They breathe through lungs on land and moist skin while in water.
- But tadpoles breathe through gills.
- Frogs and toads don't have tails while newts and salamanders have tails in the adult stage.

Examples of amphibians

- Frogs
- Toads
- Newts
- Salamander

Differences between frogs and toads

Frog	Toad
<ul style="list-style-type: none"> ❖ Has a smooth moist skin. ❖ Has fully webbed toes. ❖ Lays eggs in mass. ❖ Has longer hind legs and larger eyes. 	<ul style="list-style-type: none"> ❖ Has a rough dry skin. ❖ Has partly webbed toes. ❖ Lays eggs in a string-like jelly. ❖ Has short hind legs and smaller eyes

- ❖ Spends most of its time in water
- ❖ Most active during day.

- ❖ Spends most of its time on land.
- ❖ Most active during night.

Structure of a frog and toad



Functions of the parts

Mouth – for feeding

Nostrils – sense organ for smell

Eyes – sense organ for sight

External eardrum – for hearing

Poison gland – produce poisonous substance that prevents other animals from eating a toad

Strong hind legs – enable a toad hop to escape from enemies

Webbed feet – enable a toad to swim in water.

Feeding, life history, respiration and adaptation of frogs

Feeding in frogs / toads

- Adult frogs and toads are carnivores.
- They feed on worms, beetles, cockroaches and other insects.
- They have wide mouth and sticky tongues for picking food.
- They have a series of small teeth in the mouth to hold their prey so that they don't escape.

Life cycle (metamorphosis) of a frog / toad

- During rains the male and female form a pair in water
- The males make noises (croaks) to attract females.
- The male climbs the female's back
- The female lays eggs as the male sheds sperms over them and get fertilized externally.
- Eggs are also smeared with a sour jelly called spawn: **to protect them against predators and keep them together.**
- After about 2 weeks the eggs hatch into young ones called tadpoles.

Qn. How do eggs of amphibians hatch?

- By help of heat from the sun.

Diagrams showing eggs of a toad and frog.

frog	toad
	

Respiration in a toad/ frog

A frog can breathe in three different ways;

i) lungs ,bucal cavity and moist skin.

ii) A toad can breathe through the bucal cavity and lungs only

Differences between a tadpole and an adult frog / toad

Tadpole	Adult
<ul style="list-style-type: none"> - It has gills for breathing. - Has a tail for swimming 	<ul style="list-style-type: none"> - uses lungs and moist skin for breathing. - uses its webbed feet for swimming

Ways in which a frog is adapted to living in water

- Has a streamlined body that enables it to move easily in water.
- Have strong hind legs with fully webbed feet so it can swim rapidly.
- The eyes and nostrils are arranged in such a way that they can float on water and its body is hidden from its enemies.
- They can hibernate during dry season i.e. rest or sleep.

Mention the importance of amphibians

- They feed on harmful insects such as houseflies.
- Used as specimen in science laboratories.

f. Fish

Characteristics of Fish

- They are poikilothermic animals.
- They live in water.
- They have fins used for swimming.
- Their eggs undergo external fertilization.
- They have streamlined bodies to reduce friction while swimming.

In which ways are fish are adapted to living in water?

- Have streamlined bodies.
- Have gills for breathing in water.
- Scales and colour provide them with protection..

Mention the importance of fish.

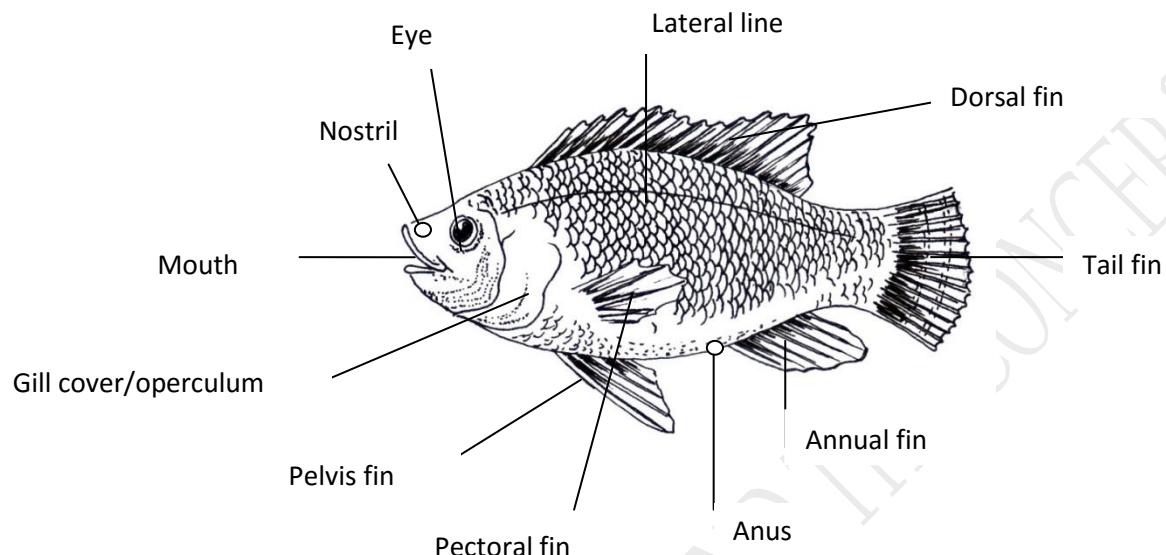
- They are eaten as food. They are a good source of proteins.
- Their bones are used in the manufacture of glue.
- They are sources of income when sold.
- Silver fish are used to make animal feeds.

- Fish control vectors.

How do fish control vectors?

- By feeding on the larva of mosquito while in water

External features of fish



Give the functions of the parts of the fish below.

The mouth – helps fish to take in food and water.

Nostrils – used for smelling and tasting food

Scales – protect the body from external injuries.

Gill cover or operculum - protects the gills from damage.

Lateral line – to detect sound movement in water

Qn. How does a lateral line detect movements in water?

- By vibration of the fluid.

Fins – make fish stable and control the direction in water.

Caudal fin: helps a fish to swim forward

Dorsal fin: keeps the fish upright

Pelvic fin: helps to reduce speed

Helps a fish to swim upwards and downwards

Pectoral fin: helps to reduce speed

Helps it to swim upwards and downwards

Gills – used for breathing

How do fish carry out external fertilization?

The male fish sheds sperms on eggs.

How fish protect themselves against enemies

- By use of dorsal fins and teeth.
- Fish have slippery bodies.

Why are gill filaments very many in number?

- To increase the surface area for absorbing oxygen in water.

Give one reasons why a fish dies when removed from water.

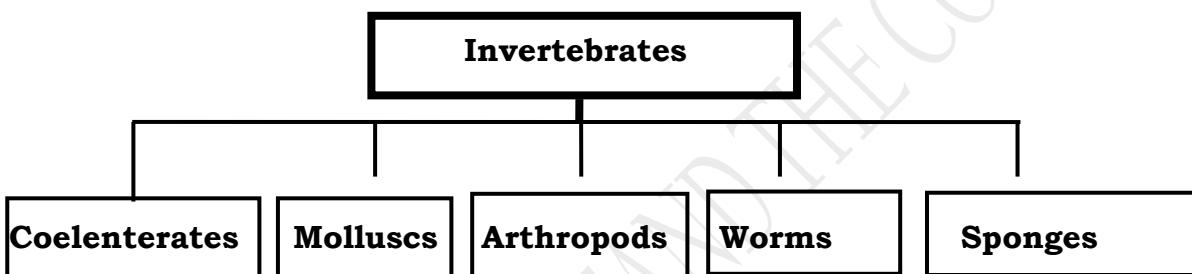
- Gill filaments stick together which reduces the surface area for absorbing oxygen
- The muscular system of the mouth and operculum work only in water but not in air.

INVERTEBRATES

- Invertebrates are animals without back bones.

Give two Characteristics of Invertebrates.

- They do not have back bones.
- Some have Exo – skeletons



Mention the groups of invertebrates.

- Worms
- Echinoderms
- Coelenterates
- Sponges
- Molluscs
- Arthropods

1) Arthropods

- These invertebrates with segmented bodies and jointed legs.

State two characteristics of arthropods.

- ❖ They all have segmented bodies and jointed legs.
- ❖ They all have Exo skeleton.

NB. The Exo skeleton prevents growth in size. Arthropods shed their Exo skeleton through the process known as moulting.

Name four Classes of arthropods.

- Crustaceans
- Insects
- Arachnids
- Myriapods

Give any two examples of arthropods.

- | | | |
|----------------|-----------|-----------|
| • Crab | • shrimps | • Cyclops |
| • sand hoppers | • lobster | • pawns |

- cray fish
- wood louse
- barnacles

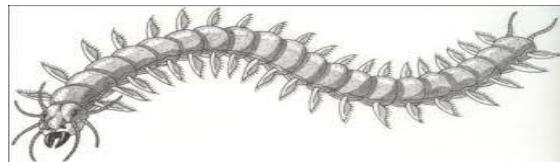
Myriapods

- There are two groups;
 - ✓ chilopoda
 - ✓ diplopoda.

a) Chilopoda (centipedes)

- Have a pair of jointed legs attached to each segment.
- They have a pair of antennae
- They have poison claws on their front legs.
- They feed on small insects (they are carnivorous animals)

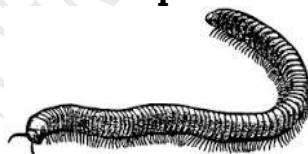
Centipede



b) Diplopoda (millipedes)

- Have two pairs of jointed legs on each segment.
- They protect themselves by coiling and produce a bad smell.
- They are herbivores and help in aerating the soil.

Millipede



How are Arachnids similar to insects?

Give two characteristics of arachnids.

- Have only two main body parts (cephalothorax and abdomen).
- They breathe by means of book lungs.

Mention any one example of arachnids.

- Scorpions,
- Spiders,
- Mites,
- Ticks

How are spinnerets important to the spider?

- They are used to spin silk to make cob webs.

How are the cob webs useful to the spider?

- The cob webs are used to trap insects (prey).

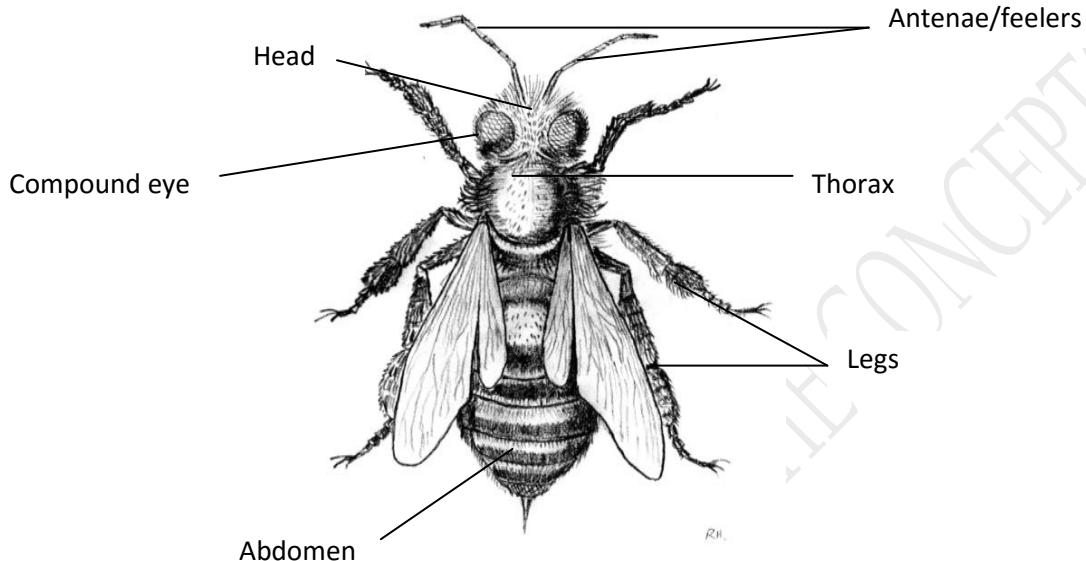
State how scorpions protect themselves.

- Scorpions protect themselves by stinging.

Mention any two characteristics of insects.

- They have three pairs of jointed legs.
- They have three main body parts.
- They breathe through spiracles.

Structure of an insect



Give the main functions of the following parts of an insect;

- a) **Antennae:** for hearing, for feeling, for sensing direction.
- b) **Proboscis:** for sucking.
- c) **Mandibles:** for biting, for cutting
- d) **Compound eyes:** for seeing.
- e) **Halters:** used for balancing during flight.
- f) **Suction pads:** help an insect to move on the walls
- g) **Legs** are also used for walking.
- h) **Wings;** for flying.
- i) **Spiracles:** for breathing.
- j) **Ovipositor:** for laying eggs.
- k) **Stinger:** for protection against enemies.

What is metamorphosis?

- Metamorphosis refers to major stages of development an insect undergoes.

Mention two types of metamorphosis.

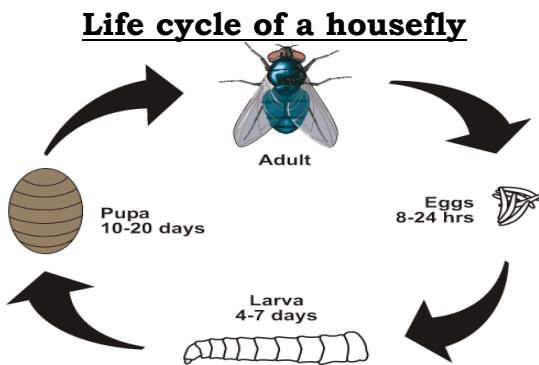
- Complete metamorphosis
- Incomplete metamorphosis

Define Complete metamorphosis.

- Is where an insect undergoes four stages of development i.e. eggs, larva, pupa and adult.

Mention two examples of insects which go through complete metamorphosis.

- Houseflies
- Mosquitoes
- Butterflies
- Moths
- bees



How are maggots important to man?

They reduce the volume of faeces in a pit latrine by feeding on them.

Why is it not advisable to pour oil or any chemical in a pit latrine?

- They kill maggots which reduce the volume of faeces in a pit latrine.

Mention one danger of houseflies / economic importance of houseflies.

- They carry germs on their hairy bodies which cause diseases like dysentery, cholera, typhoid, trachoma, etc.

Give two uses of house flies to man.

- They help to locate dirty places in the environment.
- Their larvae help to reduce the volume of faeces in a pit latrine.

How to control diseases spread by house flies.

- Ensuring proper disposal of waste.
- Covering left over foods in clean containers.
- Regular burning of rubbish.
- Spraying houseflies using insecticides.

MOSQUITOES

Mention the types of mosquitoes.

a) Anopheles mosquito

- Female anopheles mosquito spreads a germ in the protozoan group called plasmodium
- The germ causes malaria.
- Female anopheles mosquito feeds on blood.

Why? To make eggs mature.

- Female anopheles mosquito produces saliva while sucking blood: **to prevent blood from clotting.**
- The male anopheles mosquito does not feed on blood but it feeds on plant juices.

Qn. Why can't male anopheles mosquito spread malaria?

- It feeds on plant juices but not blood.

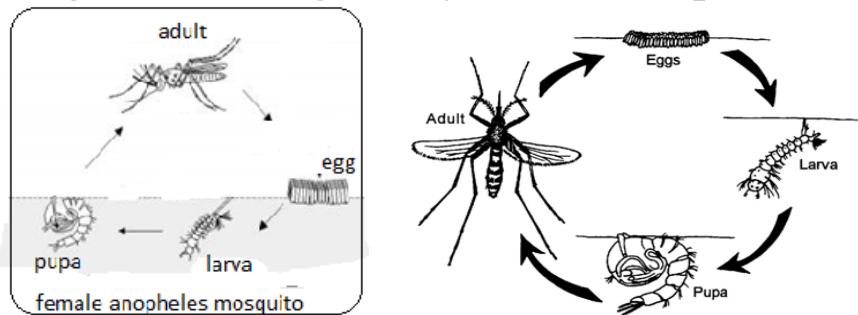
b) Culex mosquito

- It spreads a worm called filarial which causes elephantiasis (filariasis).
- The disease makes the legs to grow big like those of an elephant.

c) Aedes or tiger mosquito

- Spreads the virus that causes either yellow fever or dengue fever in human beings.

Diagram showing life cycles of mosquitoes.



NB.

- The larva of a mosquito breathes through breathing tubes called **siphon**
- The larva of a mosquito is called a **wriggler**, the pupa is a **tumbler** while that of a butterfly is called a **caterpillar**, and the pupa is **chrysalis**

State one danger of the larva of the butterfly

- The larva (caterpillar) is very destructive because it feeds on plant leaves.
- Name the stage of a butterfly which does not feed.
- The pupa (chrysalis) does not feed. It rests in a cocoon.

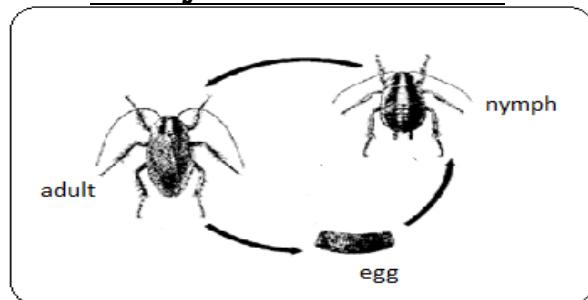
What is Incomplete metamorphosis?

- Is where an insect undergoes three stages of development.i.e. eggs, nymph and adults.

Write ant two examples of insects that undergo incomplete metamorphosis.

- grasshoppers, locusts, cockroaches, crickets, termites

Life cycle of a cockroach



In which ways are the following insects dangerous?

a) Cockroaches

- Destroy clothes, books, food

- They transmit diseases like typhoid fever, diarrhea, polio and amoebic dysentery

b) Mosquitoes

- Transmit diseases such as malaria, elephantiasis, dengue fever, yellow fever

c) Tsetse flies

- Transmit nagana to animals and sleeping sickness to human beings

d) Honey bees

- They sting

e) Termites

- Destroy crops
- Damage buildings and other structures.

f) Grass hoppers

- Damage crop leaves

g) Butterfly and moth

- During the larva stage caterpillars destroy crops and plants

How are the following insects important?

a) Honey bee

- Pollinate flowers
- We get honey and wax from them

b) Termites

- Break down plant materials and form soil

c) Grasshoppers

- They are eaten as food.
- Source of income when sold.

d) Butterflies and moths

- Pollinate flowers
- Some caterpillars eat other insects
- Silk worm produces silk used for making cloth

e) House flies

- ❖ During the larva stage reduces the volume of faeces in latrines.

Molluscs

Molluscs are invertebrates with soft and unsegmented bodies.

Give any two characteristics of mollusk.

- Have soft and unsegmented bodies.
- They reproduce by laying eggs.
- Some have shells used for protection.

Name the examples of molluscs.

- snails,
- slugs,
- octopus,
- Oysters.

How are shells of snails important?

- They are used to make animal feeds.

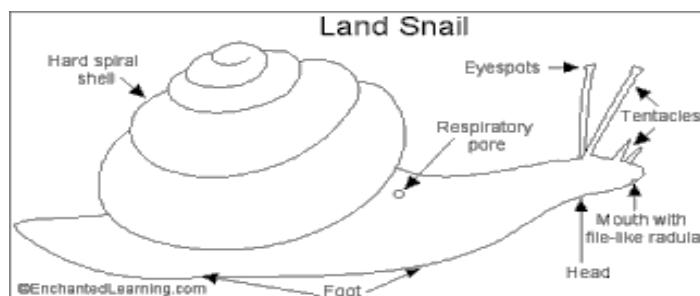
Why are shells of snails included in animal feeds?

- They are sources of calcium.

How are snails important to poultry keepers?

- Their shells are used to make mash to provide calcium

Structures of a fresh water snail



Why is a tape worm called a parasite?

- It derives food from a host.

Write two examples of flat worms.

1. Tape worms
2. Liver flukes
3. Blood flukes

How tape worms enter the body.

- Eating poorly cooked meat of infected animals.
- Eating unwashed fruits.

Give two signs of tape worm infection.

- Wasted muscles due to malnutrition.
- Segments in faeces

How to prevent tape worms

- Eating well cooked meat.
- Wash fruits before washing them.
- Regular deworming.
- Ensure proper disposal of human waste.

How do hook worms cause anemia?

- They damage blood vessels and cause intestinal bleeding.
- They suck blood.

Write two ways hook worms are spread.

- Through drinking contaminated water.
- Through walking in dumpy areas bare footed.

State any two signs of hook worm infection.

- Intestinal bleeding.
- Small wounds on intestines.
- Pale tongue, gums, eyelids and finger nails.

Give two symptoms of hook worm infection.

- Abdominal pain.
- Weakness and tiredness.

How can we Prevent hook worm infection?

- Boil water for drinking.
- Wear shoes or sandals while walking in dumpy areas.
- Regular deworming.

How do earth worms breathe?

- Breathe through the moist skin.

Why do earth worms normally come out of the soil after raining?

- To get enough oxygen.

How do earth worms aerate the soil?

- By making tunnels in the soil.

Why are earth worms called hermaphrodites?

- They have both male and female reproductive organs.

What are Hermaphrodites?

- Hermaphrodites are organisms with both male and female reproductive organs.

Mention any two examples of hermaphrodites.

- Earth worm
- Leech
- Bristle worm

Write down any two importance of earth worms.

- ❖ They aerate the soil.
- ❖ They help in the formation of humus.
- ❖ Help in water infiltration into the soil.

How do earth worms depend on the soil?

- They live in the body.
- They get food from the soil.

TOPIC **SOUND ENERGY**

What is sound?

- **Sound** is the form of energy produced by vibration of objects.

Why is sound called a form of energy?

- It can do work.

How is work done by sound important to us?

- It enables us to hear.

What is Vibration?

- Is the repeated to and fro movement of an object.

Give any two natural sources of sound include.

- Crying baby
- Talking man,

- animals,
- thunder,
- storms,
- Waterfalls etc.

What are artificial sources of sound?

- These are people made sources and include; radios, bells, gun, flute, cars, musical instruments like guitars, harps, tube fiddles, drums, etc

How is sound produced?

- Sound is produced by vibrations of different objects.

How sound is produced by living things

- All **mammals**; produce sound by vibrations of vocal cords.
- **Birds**; make sound by vibration in the rings of cartilage in the trachea.
- **Bees and mosquitoes**; produce sound by flapping their wings rapidly.
- **Grass hoppers and crickets**; produce sound by rubbing their hind legs against their wings.

State any two properties of sound.

- Sound travels by means of sound waves.
- Sound requires a medium or material in order to travel.
- Sound can be reflected

Speed of sound in the three states of matter.

- Sound travels through **solid**, **liquid**, and **gas** at different speed

Table showing speed of sound in the three states of matter

state	solid	liquid	Gas
speed	1500m/s	1484m/s	330m/s

Note:

- Sound travels fastest in solid: **molecules are compact**.
- Slowest in gas: **molecules are mobile**.
- Does not travel in a vacuum: **because it does not contain matter**.

Write down two factors that affect speed of sound.

- Temperature
- Altitude
- Wind

What is Pitch?

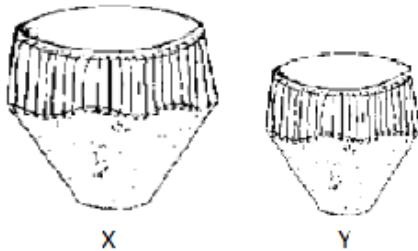
Pitch is the highness or lowness of sound.

Mention any three factors that affect or determine the pitch of sound.

- The size of the vibrating surface

- Nature of the vibrating object:
- Frequency of the vibration
- Thickness or thinness of the vibrating object
- Tension (tightness or looseness) in the vibrating surface

Study the diagrams below and use them to answer the following questions.



Which of the two drums will produce the higher pitched sound?

- Drum Y

Give the reason for your answer above.

- Drum Y has the smaller vibrating surface.

Which drum will produce the low pitched sound?

- Drum X

Give a reason for your answer.

- Drum X has the larger vibrating surface.

What is frequency?

- Frequency is the number of vibrations per second.

Define Volume of sound.

- Volume is the loudness or softness of sound.
- Amplitude is the factor that determines volume of sound.

Give two types of sound.

- a) Music
- b) Noise

Music

- This is organized sound with regular vibrations.

Noise

- This is disorganized sound with irregular vibrations.

What are musical instruments?

- These are instruments which produce organized sound.

Mention three groups of musical instruments.

- a) **String instruments:** - these produce sound by vibration of the strings and air around when plucked e.g. violin, tube fiddle, guitar etc.
- b) **Wind instruments:** - these produce sound by vibration of air inside them when blown e.g. flute, trumpet, pine pipes, a bottle, saxophone, horn, etc.
- c) **Percussion instruments:** - these produce sound by vibration of the surface when hit e.g. xylophones, bells, shakers, rattles etc.

ECHOES / REFLECTION OF SOUND

- An **echo** is a reflected sound.
- An echo is formed when sound is blocked by a hard surface.

Mention any two uses of echoes.

- Bats use echoes to locate food and find their way.
- Pilots use echoes to detect obstacles like mountains.
- Sailors use echoes to find the depth of the water body.
- Fishermen use echoes to detect shoals of fish.
- Whales use echoes to know if there is an obstacle like rocks.

Give one danger of echoes.

- Echoes make hearing difficult.

How can we control echoes?

- Putting curtains in cinema halls and theatres.
- Putting porous soft boards on walls of cinema halls and theatres.
- Covering walls with blankets.
- Putting thick carpets on the floor of a cinema or theatre hall.

Name any three things used to reduce echo.

- Curtains
- Blankets
- Porous soft boards
- Thick carpets

Note: Things used to reduce echo should be porous and soft: **to absorb sound.**

Calculating distance and time using speed of sound

Example 1

A man heard a gunshot after four seconds. How far is he from the firing spot?

Distance =?

Speed of sound = 330 m/sec.

Time = 4 sec.

$$D = S \times T$$

$$D = 330 \text{ m/s} \times 4 \text{ s}$$

$$D = (330 \times 4) \text{ m}$$

$$D = 1320 \text{ m}$$

Therefore the man is 1320 m from the firing spot.

Example II

It takes three seconds for a man to hear the echo of his clap. How far is he from the cliff that reflected the sound?

Speed of sound = 330 m/sec

Time taken = 3 sec

Distance =?

$$D = S \times T/2$$

$$D = 330 \text{ m/s} \times 3/2 \text{ s}$$

$$D = 990/2$$

$$D = 495 \text{ m}$$

Example III

Amooti was standing across the valley, which was 660 metres from the cliff. If he shouts, how long will it take to hear the echo?

$$D = 660 \text{ m}$$

$$S = 330 \text{ m/s}$$

$$T = ?$$

$$T = D/S$$

$$T = 660 / 330 \times 2$$

$$T = 2 \times 2$$

$$\underline{T = 4 \text{ sec}}$$

Example IV

Okello was standing 165 metres away from his father who called him by clapping. How long did it take Okello to hear the clapping?

$$T = ?$$

$$D = 165 \text{ m}$$

$$S = 330 \text{ m/s}$$

$$T = D/S$$

$$T = 165 / 330$$

$$T = 0.5 \text{ sec}$$

Why should sound be stored?

- Sound can be stored for future use.

Give any two ways of storing sound.

- Using notation method
- Recording it on compact discs.
- Recording it on memory cards
- Recording it on video compact discs
- Recording on MP3.
- Recording it on flash cards.

List down any two devices that store sound

- Memory card
- digital versatile disc
- Compact disc
- Telephones etc.

Apart from using discs, how else can sound be stored?

- By using notation method.

Mention one way of reproducing sound.

- Sound can be reproduced by playing the recorded sound.

Name any two devices that reproduce sound.

- Telephone
- DVD player
- Computer
- video deck
- Compact disc player
- MP3 player

State any two ways of reproducing sound.

- By using of a telephone.
- By using a computer.
- By using MP3 player.
- By using compact disc player.

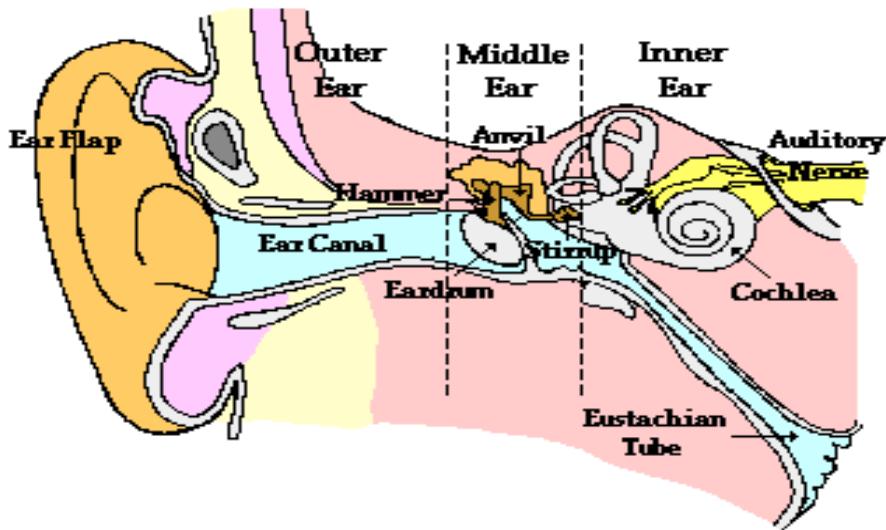
- By using a DVD player.

READ AND UNDERSTAND THE CONCEPTS

The human mammalian /ear

- Used for hearing.
- Helps in body balancing.

Structure of the mammalian ear



The ear is divided into three parts i.e.

- a) The outer ear,
- b) middle ear
- c) the inner ear

Give the main functions of the parts of the ear.

- a) **Pinna** – collects sound waves from the environment and sends it to the auditory canal
- b) **Auditory canal** – directs sound waves to the ear drum from the pinna.
- c) **Ear drum**–vibrates when hit by sound waves.
- d) **Ossicles** – a chain of three small bones i.e. hammer, anvil, stirrup (**HAS**) or malleus, incus, stapes (**MIS**). They amplify sound vibration. Carry sound waves from eardrum to the oval window. Increase the force of vibration.
- e) **Oval window** – passage of sound vibrations from the ossicles to the inner ear.
- f) **Eustachian tube** – balances air pressure on either side of the ear drum.
- g) **Semi-circular canals** – control body balance. Works like the **cerebellum** of the brain.
- h) **Cochlea** – changes the sound vibrations into nerve impulses.
- i) **Auditory nerve** – carry sound impulses from the ear to the brain for interpretation

Mention any two problems that affect the ear (ear defects).

- Earache
- Deafness
- Ear discharge

How can partial deafness be controlled?

- Removing wax from ears regularly.

Note:

- Wax in the ears traps dust.
- Too much wax in the ears should be removed using **cotton buds** or **warm water**.
- Warm water **melts wax**.

Why is it not advisable to use sharp objects when cleaning the ear?

- It causes permanent deafness.

Name any two general causes of deafness.

- Breaking the ear drum
- Too much wax in the ears
- Ear infections.

Identify the diseases of the ears.

- Earache
- Otitis
- Ear discharge
- Deafness
- Ear ringing
- Mechanical damage.

Name the disorders of the ear

How can we care for the ears?

- Wash the ear daily with clean water and soap to remove dust.
- Never use sharp objects to clean the ear.
- Remove wax from ears regularly.
- Do not listen to very loud sound.

TOPIC THE CIRCULATORY SYSTEM

What is circulatory system?

- This is a system concerned with the movement or flow of blood in the body.

What is Blood circulation?

- Is the movement of blood around the body.

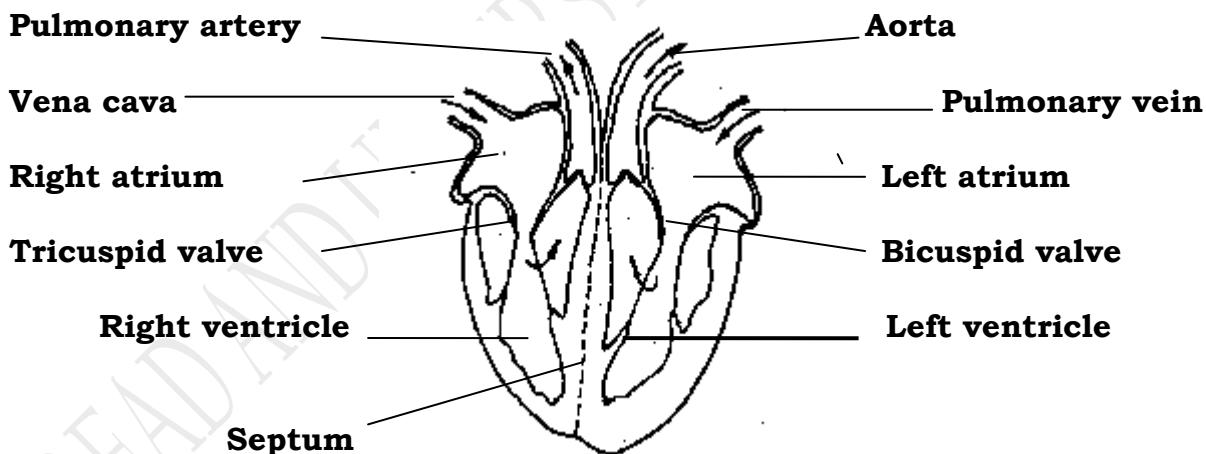
Name the three main components circulatory system.

- The heart
- The blood
- Blood vessels

THE HEART

- It is divided into two parts by a thick wall called **septum**.
 - ✓ The right side deals with de-oxygenated blood.
 - ✓ The left side deals with oxygenated blood.
- The heart is further divided into four chambers i.e.
 - ✓ The upper chambers referred to as auricles/atria (the right and left auricles)
 - ✓ The lower chambers referred to as ventricles (the right and left ventricles)

THE STRUCTURE OF THE HEART



Write the functions of the parts of the heart below.

1. **Vena cava** – It carries deoxygenated blood from all body parts to the heart.
2. **Pulmonary artery**– It carries deoxygenated blood from the heart to the lungs.
3. **Pulmonary vein** – It carries oxygenated blood from the lungs to the heart.
4. **Aorta**– It carries oxygenated blood from the heart to all body parts.
5. **Valves** – They prevent the back flow of blood.

6. **Septum** – It separates the left from the right side of the heart.

Why does blood first goes to the heart?

NB: Blood goes to the lungs to release carbon dioxide and pick oxygen.

- From the lungs, blood is carried to the left atrium through the pulmonary vein and then pumped to all body parts through the aorta.
- The left side of the heart has thicker muscles because it pumps blood with pressure to all body parts.

Note

- The normal heart beat of a person is 72 times a minute, but can go beyond if there is fear or excitement.
- The circulation of blood all around the body was first discovered by Sir William Harvey (1578 - 1637) English physician.
- The instrument used by doctors to detect heart beat is called a **stethoscope**.

Name the body organs related to the circulatory system.

1. **Heart** – Pumps blood to all body parts.
2. **Lungs** – It is where blood is oxygenated.
3. **Kidney** – It is where blood is filtered/purified
4. **Small intestine** – Blood picks digested food to be supplied to body parts.
5. **Liver** – Regulates amount of sugar in blood.

Identify four components of blood.

- White blood cells
- Red blood cells
- Blood plasma
- Platelets

What are the main functions of the following components of the blood?

a) **White blood cells**

- To defend the body by fighting disease causing germs in the body.

b) **Red blood cells**

- To carry or transport oxygen around the body

c) **Blood plasma**

- It transports digested food
- It transports carbon dioxide from body cells to lungs.
- It transports heat in the body.
- It transports hormones.

Mention two characteristics of white blood cells.

- Have a nucleus.
- Do not have a definite shape.

How do white blood cells fight disease causing germs?

- By engulfing and digesting the germs.
- By producing anti-bodies against germs.

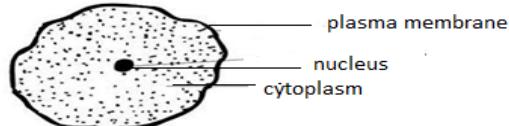
How are white blood cells adapted to their function?

- Are very many in number.
- Do not have a definite shape.

Why are white blood cells not having a definite shape?

- To engulf germs easily.
- To enable them pass through blood capillaries.

Simple diagrams of white blood cells



Mention two characteristics of red blood cells.

- They do not have a nucleus.
- They do not have a definite shape.

Why are red blood cells not having a nucleus?

- To increase the surface area for transporting oxygen

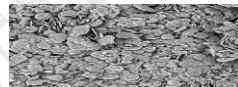
How are red blood cells adapted to their function?

- They do not have a nucleus.

Diagrams showing red blood cells



Diagram showing the platelets



Name the liquid part of the blood.

- Plasma is the liquid part of blood.

Name the components of plasma.

- | | |
|-----------------|------------------|
| • Digested food | • water |
| • Antibodies | • Carbon dioxide |
| • Hormones | |

Mention any two general functions of blood.

- It carries oxygen and digested food to all body parts.
- It transports waste products from all parts of the body to excretory organs.
- It transports carbon dioxide from the body cells to the lungs.
- It contains white blood cells that defend the body against disease germs.
- It distributes heat all parts of the body.
- It carries hormones in the body.

BLOOD GROUPS

- There are four blood groups namely

- ✓ Blood group A
- ✓ Blood group B
- ✓ Blood group AB
- ✓ Blood group O

Note:

- Blood is grouped according to the clotting agent A and B
- A person who gives blood is called a donor.
- A person who receives blood is called receiver or recipient.

Receiver (Recipient)	Donor
Blood group	Blood group
A	A, O
B	B, O
AB	AB, A, B, O
O	O

Note:

- A person with blood group AB is called a universal recipient.

Why?

- Because he or she receives blood from all blood groups.
- A person with blood group O is called a universal donor.

Why?

- Because he or she gives blood to all blood groups but receives blood from blood group O only.
- A person with blood group AB receives blood from all blood groups but donates to only blood group AB.

NB:

- Because of HIV/AIDS, all blood must be screened before it is donated.

What is Blood Transfusion?

- Blood transfusion is the transfer of screened blood from one person to another as long as the blood groups match.

How do people lose blood?

- Through accidents
- Due to untreated malaria
- Women lose blood when giving birth.

Why should blood be screened before transfusion?

- ❖ To identify the blood group.
- ❖ To check for blood diseases.

Blood vessels

- These are tubes which carry blood around the body.

Mention the three blood vessels namely

- ✓ Arteries
- ✓ Veins
- ✓ Capillaries

Arteries

- These are blood vessels which carry blood away from the heart.

State the Structural characteristics of arteries.

- Have thick walls.
- Have narrow lumen.
- Have elastic muscular walls.

Identify the Non-structural characteristics of arteries.

- Carry blood away from the heart.
- Blood in arteries flows with pulse.
- Blood in arteries flows with high pressure and speed.

NOTE: the main artery is the **aorta**.

How are arteries adapted to their function?

- They have thick walls to withstand the high pressure at which blood flows.

Veins

- Veins are blood vessels that carry blood towards the heart.

Give any two structural characteristics of veins.

- They have thin walls.
- They have wide lumen.
- They have valves.

Suggest Non-structural characteristics of veins.

- Carry blood towards the heart.
- They carry blood with low pressure and speed.
- Blood in veins does not flow with pulse.

Note: The biggest vein in the body is the **vena cava**.

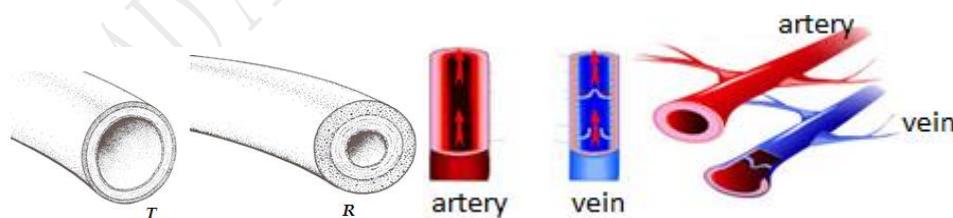
How are veins adapted to their function?

- They have valves to prevent the back flow of blood.

NOTE

- All veins carry de-oxygenated blood apart from the pulmonary vein.

Structure showing artery and a vein:



Capillaries

- These are blood vessels that join arteries to veins.
- They are the smallest blood vessels.

Mention any two characteristics of capillaries.

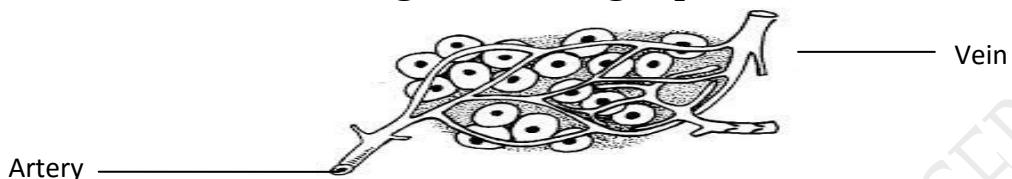
- Have porous walls.

- Join arteries to veins.
- Their walls are one cell thick.

Identify any two functions of capillaries.

- Supply food and oxygen to body cells.
- Take away waste from body cells.

A diagram showing capillaries



Mention the differences between arteries and veins.

Arteries	Veins
i. Arteries carry blood away from the heart. ii. Arteries have thick walls iii. Arteries have narrow lumen. iv. Arteries carry blood containing more oxygen. v. Arteries have a rhythmic flow of blood called pulse.	i. Veins carry blood towards the heart. ii. Veins have thin walls. iii. Veins have wide lumen. iv. Veins carry blood containing more carbon dioxide. v. Veins have valves to prevent the back flow of blood.

Identify any two examples of opportunistic infections.

- ✓ Malaria
- ✓ Dysentery
- ✓ Tuberculosis
- ✓ Pneumonia

Mention any three diseases of the circulatory system.

- | | |
|--|---|
| <ul style="list-style-type: none"> • AIDS • Coronary heart disease • Malaria • Anaemia | <ul style="list-style-type: none"> • Sickle cell anaemia • Haemophilia • Leukaemia |
|--|---|

Give any two diseases of the heart.

- Heart attack
- high blood pressure(hypertension)
- Coronary heart disease
- heart murmur

Identify General causes of heart diseases.

- Smoking
- Alcoholism
- Eating too much fatty foods.

State two ways of preventing and controlling of diseases of the circulatory system

Disease	Prevention and control
----------------	-------------------------------

AIDS	<ul style="list-style-type: none"> • Abstain from sex • Have protected sex • Have one lifelong sexual partner • Use screened blood for blood transfusion • Avoid sharing skin piercing objects
Malaria	<ul style="list-style-type: none"> • Drain stagnant water • Sleep under treated mosquito nets • Spray using insecticide
Sick cell Anaemia	<ul style="list-style-type: none"> • It has no cure
Anaemia	<ul style="list-style-type: none"> • Feed on food containing iron • Seek for early medical advice to treat symptoms
Heart disease	<ul style="list-style-type: none"> • Avoid eating a lot of fatty foods • Avoid smoking • Doing body physical exercises regularly.

Suggest any three disorders of the circulatory system.

- Heart attack
- Heart stroke
- Heart failure
- Blood clot
- Cuts and wounds
- Excessive bleeding

How to maintain proper functioning of the circulatory system

- Feed on a balanced diet.
- Have regular physical body exercises
- Eat meals containing low animal fats.

TOPIC

ALCOHOL, SMOKING AND DRUGS IN THE SOCIETY

ALCOHOL IN SOCIETY

What is alcohol?

- Alcohol is a chemical substance which when taken changes the way one's mind works.

Name the two types of alcohol.

- Methanol alcohol
- Ethanol alcohol

Mention two methods of producing alcohol

- Fermentation.
- Distillation.

Define the term fermentation.

- Fermentation is the process by which sugar in juice is turned into alcohol with the help of yeast.

How is fermentation important?

- Fermentation is used locally to brew alcohol.

Note; fermentation in industries is used to brew: **beer, spirits** and **wine**.

This method is used to produce **crude alcohol**.

What is distillation?

- This is the process of boiling crude beer to vapor to obtain a distillate.

Name two processes involved in distillation.

- Condensation
- evaporation

NOTE

- Alcohol produced is called **distilled alcohol**.
- Scientific name is called a **distillate**.

State any two uses of alcohol.

- For drinking.
- Used in making cosmetics and perfumes.
- Used to sterilize medical instruments in hospitals.
- Sell it and get money.

Why is the delivery tube coiled?

- To prevent the back flow of distilled.

State the importance of cold water.

- Helps to condense the vapour

Why is home distilled alcohol not good for drinking?

- It is not purified.

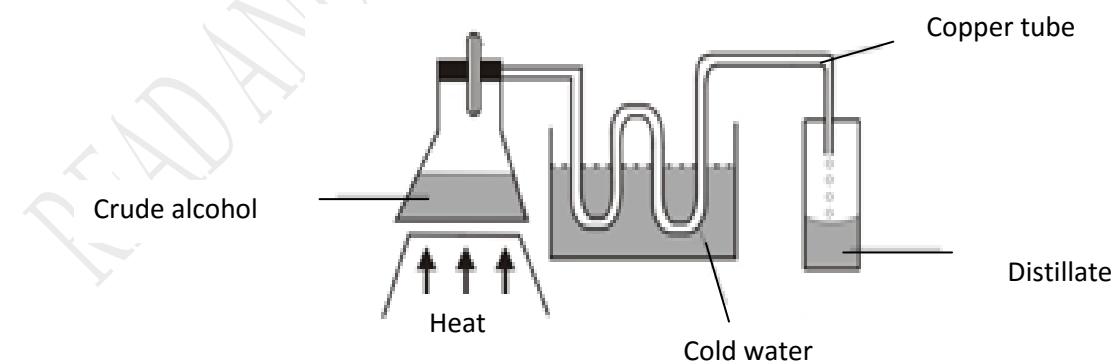
Why the mixture of water and alcohol is separated using fractional distillation?

- They are in liquid form.

How is heat important in the above diagram?

- Helps in evaporation

Illustration showing distillation method



Identify any two effects of alcohol to an individual.

- Lowers concentration at work.
- Loss of job due to poor performance.
- Loss of appetite for food.
- Loss of memory.

- It damages the liver, brain and pancreas.
- Leads to self-neglect
- Weakens body immunity.

Give any two effects of alcohol to a family.

- It leads to family neglect.
- It causes spouse and child abuse.
- Children may copy the habit of drinking.
- It causes domestic violence

Alcoholism

Who is an alcoholic?

- A person who depends on alcohol for normal functioning of the body or a person who is addicted to alcohol.
- Addiction is a condition in which a person has a very strong desire to take alcohol every day.

What is alcoholism?

- A condition where an individual depends on alcohol for normal functioning of the body.

Name the body organs damaged when you drink alcohol.

- Liver
- Brain
- stomach

Identify any two effects of alcohol on the community

- Increased road traffic accidents.
- It leads to poverty.
- Leads to high crime rate.
- There is easy spread of sexually transmitted diseases.

Give any two reasons why people drink alcohol.

(Factors that lead to alcoholism)

- To fit in peer groups.
- To quench thirst.
- To express happiness.
- To overcome sadness.
- To forget their problems.

How to avoid alcoholism

- Join good social groups such as football clubs.
- Say no to people who persuade you to drink alcohol.
- Get more information about dangers of drinking alcohol.

What are the Uganda laws on alcohol?

- Persons under 18 years of age are not allowed to drink alcohol.
- Do not drive while drunk.
- Home distillation of alcohol is not allowed.
- Bars should not operate during working hours.
- Customers are not allowed to drink from unlicensed places like shops.

SMOKING

What is smoking?

- This refers to the inhaling of tobacco smoke.

Give two ways of smoking.

- Active smoking
- Passive smoking

Define the following terms;

a) Active smoking

- It is where people inhale the smoke from the burning cigarette.

b) Passive smoking

- This refers to the inhaling of air containing tobacco smoke from an active smoker.

Outline any two reasons why some people smoke.

- To fit in peer groups.
- To pastime
- To feel warm.
- To relax and feel at ease
- To concentrate on what they are doing.

Name two harmful substances in tobacco.

- Nicotine
- Tar

NOTE:

- Carbon monoxide is a poisonous gas.
- Nicotine is the addictive drug.
- Tar is the poisonous substance.

Mention any two effects of smoking to;

A: Individual

- Causes lung cancer, emphysema and bronchitis.
- Weakens immunity.
- Worsens respiratory diseases like tuberculosis and asthma.

B: Family

- Loss of family income.
- Children may copy the habit.
- It encourages passive smoking to family members.

C: Community

- Smoke pollutes the environment.
- It may lead to fire accidents.

How to avoid Smoking in the society

- Decide one day not to smoke.
- Join good social groups of people.
- Learn more dangers about smoking.
- Destroy all things connected with smoking.

DRUGS

What is a drug?

- A drug is a chemical substance, which when taken increases or slows down the way the body functions.

Name two groups of drugs.

- Essential drugs
- Narcotic drugs(drugs of dependence)

What are Essential drugs?

- These are drugs that meet people's common health needs.

Identify any two qualities of essential drugs.

- Are affordable.
- Are accessible.
- They are safe if used properly.
- Are effective if used properly.

Name four essential drugs.

- Vaccines
- ARVs
- Panadol
- Aspirin

Define drug prescription.

- This refers to health workers written information on how to use a drug.

Define the term dosage.

- Dosage refers to the amount of drug take once or regularly over a period of time.

Under dose

- This is when one takes drugs below the right amount.

Causes of under dose

1. Sharing drugs
2. Self-medication
3. Fear to take bitter drugs.

Over dose: is when one takes a drug that is above the right amount.

Causes overdose

1. Self-medication
2. Too much pain
3. Buying drugs from local shops.

Give any two advantages of drug prescription.

- It helps the patient to take the correct drug.
- It prevent over dose and under dose.
- It controls misuse of drugs.

What are the dangers of taking unprescribed drugs?

- Leads to taking over or under dose.
- You may take a wrong drug
- You may take fake drugs.

What are the Factors to consider when giving drugs (prescribing drugs)?

- Patient's age

- Degree of sickness
- Kind of disease the patient is suffering from.
- Patient's body weight

Give two ways of Safe storage of drugs.

- Drugs should be stored in clean, cool dry place.
- Drugs should always be kept out of reach of children

Why should always be kept out of reach of children?

- This is done to prevent poisoning and destroying drugs.

State any two advantages of proper storage of drugs.

- It prevents drug misuse
- It controls drug poisoning
- It prevents contamination of the drug
- It helps to maintain the life span of the drug

What are the Dangers of buying drugs from shops?

- They don't have prescriptions
- Some of them are not stored properly
- Some of the drugs are sold might be expired

Drug misuse

- This is the use of a drug without the health workers advice

Give any two ways of misusing drugs.

- Sharing drugs
- Taking unprescribed drugs.
- Self-medication.

State any two causes of drug misuse.

- Buying drugs from local shops.
- Ignorance about drugs
- Self-medication
- Too much pain

What do you understand by the following terms;

a) Drugs of dependence (Narcotic drugs)

- These are drugs which cause addiction if taken for a long time.

b) Drug dependency

- This is the condition when a person depends on drugs for normal functioning of the body.

c. Drug abuse

This is the illegal use of a drug which may be harmful to one's health.

Name the Common drugs of dependency.

- | | |
|------------------|-----------|
| • Marijuana | • Alcohol |
| • Khart or miraa | • Tobacco |
| • Cocaine | |

Give any two reasons why people abuse drugs.

- | | |
|--------------------------|-----------------|
| • To overcome fear | • To pastime |
| • Due to peer influence | • To feel warm |
| • To keep awake or sleep | • Gain strength |

What are the effects of drugs of dependence to an individual?

- Brain damage
- Loss of appetite
- Insomnia (inability of sleep)
- Job neglect
- Self-neglect
- Low immunity to disease

Write any two effects of drugs of dependence to the family.

- Family neglect
- domestic violence
- Criminal acts like defilement and rape
- Loss of family income

Give any two effects of drugs of dependence to the community.

- It leads to increased accidents
- Criminal behaviour
- Poverty

Mention any two Life skills that can help you to avoid drugs dependence.

- Resist peer pressure
- Through counseling and guidance
- Follow good morals from elders
- Spending leisure time constructively by engaging in productive activities
- Reading good material which is useful to life

TERM TWO

THEME: THE WORD OF LIVING THINGS

TOPIC: CLASSIFICATION OF PLANTS

FLOWERING PLANTS

- Plants are living components of the environment
- A plant is a green growing living thing on the earth's surface
- Plants are the primary sources of food to animals

Mention two plants are classified

- Flowering plants
- Non-flowering plants.

What are flowering plants?

- Flowering plants are plants that bear flowers and reproduce by means of seeds.

Give two main systems of flowering plants.

- Shoot system
- Root system

Mention two groups of Flowering plants.

- Monocotyledonous and
- Dicotyledonous.

What are monocotyledonous plants?

- Monocotyledonous plants are plants that bear seeds with one cotyledon. They are also called **cereals**.

Mention any two examples of monocotyledonous plants.

- | | |
|-----------|---------|
| • Maize | • Rice |
| • Millet | • Wheat |
| • Sorghum | |

Give any two characteristics of monocotyledonous plants.

- The seeds of monocotyledonous plants have only one cotyledon
- They have a fibrous root system.
- They have a parallel leaf venation
- Their seeds undergo hypogea germination.

What are Dicotyledonous plants?

- These are plants that bear seeds with two cotyledons. They are also called **legumes**.

Mention any two examples of Dicotyledonous plants.

- | | |
|---------------|----------|
| • Beans | • Peas |
| • Ground nuts | • Simsim |
| • Soya beans | |

State any two characteristics of dicotyledonous plants.

- They have a tap root system.
 - Their seeds have two cotyledons.
 - Their seeds undergo epigeal germination

Give two types of root systems.

- Tap root system
 - Fibrous root system

Draw structures showing parts of a tap root and fibrous root systems.

Draw structures showing parts of a tap root and fibrous root system.	
<p>Tap root system</p>  <p>Diagram illustrating a tap root system. A central, thick tap root extends downwards from the base of the stem. Smaller, branching lateral roots extend from the sides of the tap root.</p> <p>tap roots lateral roots</p>	<p>Fibrous system</p>  <p>Diagram illustrating a fibrous root system. A cluster of numerous small, thin roots is shown emerging from the base of the stem, forming a dense mat.</p>

Mention any two functions of roots to a plant.

- Roots hold the plant (shoot system) firmly in the soil
 - Root hairs absorb water and mineral salts from the soil
 - Prop roots provide extra-support to plants
 - Root nodules of legumes store nitrogen-fixing bacteria that improve soil fertility.

Give any two importance of roots to people.

- Swollen roots with stored food are sources of food to people e.g. Cassava, Sweet potatoes, & Carrots.
 - Some plant roots acts as herbs to cure some diseases
 - Big dry roots acts as source of wood fuel to people.
 - Some big roots can be used in making craft items.

Name the root shown below.



Give any two functions of stems to a plant.

- They hold and space out leaves to receive the sunlight energy
 - Stems transport water and mineral salts from the roots to the leaves
 - Green stems help in the process of photosynthesis
 - Stems conduct manufactured food in the leaves to all other parts of the plants.

Name any two functions of stems to people.

- Some plant stems act as a source of food to both people and animals
 - Big stems provide people with timber and poles for construction

- Plant stems act as a local medicine to cure some animal diseases
- Some plants are harvested to provide wood fuel to people
- Some plant stems are used for propagation i.e. cassava, sugarcanes and some flowers.

Give three types of stems.

- Aerial stems – Upright/ erect, climbing, creeping
- Underground stems
- Climbing stems.

What are underground stems?

- These are stems which grow from underground.

Name two examples of underground stems.

- Bulbs
- Rhizomes
- Corms

Why do some plants climb others?

- Plants climb others for support.
- In order to get sun light energy.

Give two ways how plants climb others.

- Use of tendrils
- Use of hooks
- Twining or clasping

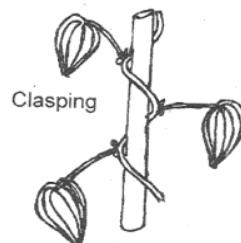
Name the method of climbing plants in the diagrams.



- Use of tendrils



Using hooks

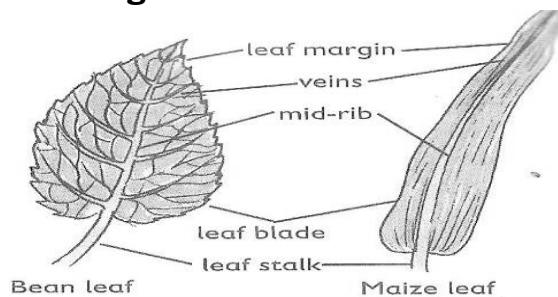


Clasping

PLANT LEAVES

- Leaves are the green parts of a plant with stomata for gaseous exchange.
- Leaves have chlorophyll to trap sunlight energy and manufacture its starch.
- Leaves also form the shoot system of a plant.
- A leaf is fixed between two internodes on a plant stem or branch.

A drawn structure showing a leaf



What are the functions of the parts of a leaf below?

a) Stomata

- They are small holes on the leaf where gaseous exchange takes place.
- They also help during the process of transpiration.

b) Veins

Distribute water and mineral salts within the leaf

c) apex

- It's the sharp tip part of a leaf to provide protection to the leaf

d) Leaf stalk / petiole

- This provides attachment of the leaf to the stem or branch.

Give the two types of leaves

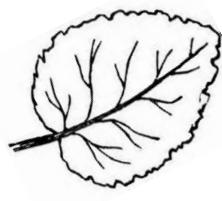
- Simple leaves
- Compound leaves

Simple leaves

- Simple leaves are leaves that have one leaflet on each leaf stalk or lamina.

Dawn structure showing different examples of simple leaves

(a) Simple serrated



(b) Simple divided entire



(c) Simple lobed



(d) Monocotyledonous plant leaf [simple lanciolate]



Compound leaves

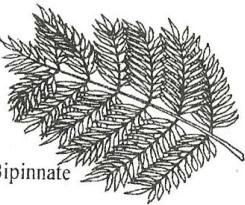
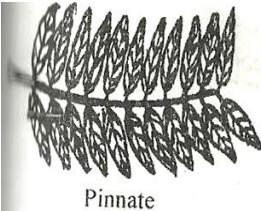
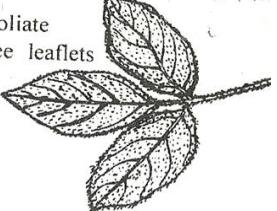
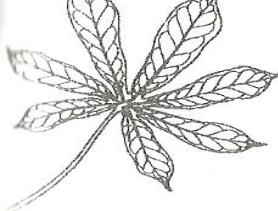
- Compound leaves have more than one leaf-let on one leaf blade or stalk.
- Each leaflet has a small stalk which is attached to a common leaf stalk.

Examples of compound leaves;

- Compound trifoliate e.g. Beans leaves

- Compound bipinnate e.g. Jacaranda leaves/ mimosa plant
- Compound digitate leaf eg. Silk cotton leaves
- Compound pinnate e.g. acacia leaves /encalyptus

Drawn structures showing examples of compound leaves

Bipinnate	Pinnate	Trifoliate	Digitate
 Bipinnate	 Pinnate	 Triolate three leaflets	

Leaf venation

- Plant leaf venation refers to the arrangement of veins in a leaf.

Name two types of leaf venations:

- i) Network leaf venation
- ii) Parallel leaf venation

A drawn structure showing a network leaf venation of a plant leaf



Drawn structure showing a leaf with parallel leaf venation



State any two importance of leaves to people.

- Leaves are a source of food to people.
- People use leaves as herbal medicine.
- People use some leaves as building materials

PHOTOSYNTHESIS IN PLANTS

What is Photosynthesis?

- Photosynthesis is the process by which plants make their food.
- The word “photo” means light, “synthesis” means to make or “buildup”

Mention two raw materials needed for photosynthesis.

- Water
- Carbon dioxide

Name the by-product photosynthesis.

- ❖ Oxygen

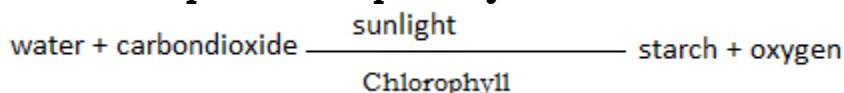
Mention the conditions needed for photosynthesis

- Sunlight
- Chlorophyll

Name the product of photosynthesis.

- Starch

Write the equation for photosynthesis.

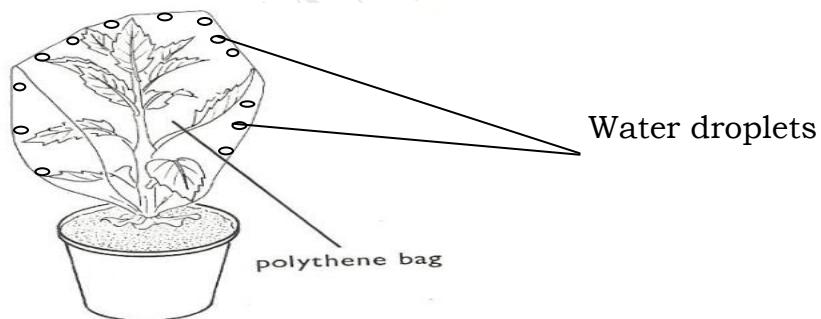


TRANSPERSION

What is photosynthesis?

- Transpiration is the process by which plants lose water as vapour into the atmosphere.
- Transpiration takes place in plants through the stomata of leaves, lenticels and in the cuticle of stems.

Illustration showing transpiration in plant leaves.



Outline four factors that affect the rate of transpiration in plants.

- | | |
|----------------|----------------------------|
| ➤ Wind | ➤ Sunlight: |
| ➤ Humidity: | ➤ Surface area of the leaf |
| ➤ Temperature: | ➤ Number of stomata |

How important is transpiration to plants?

- Transpiration helps water and mineral salts to move from roots to the rest of the plant parts by the process of **capillary attraction**.
- Transpiration helps in cooling the plant during a hot day.

Give one importance of transpiration to the environment.

- The transpired vapour from the plants helps in the formation of rain.

State one danger of transpiration.

- Excessive transpiration makes plants to dry (wilt)
- It lowers the crop yields due to less water left in the plant.

Give any two ways plants reduce the rate of transpiration.

- By shedding their leaves especially during dry season
- Some plants curl their leaves
- Some plant leaves have few stomata and distributed at the lower part of the leaf.
- Some plants have leaves with a small surface area to reduce the rate of water loss
- Leaves have a wax-like layer to cover their stomata to limit the water loss.

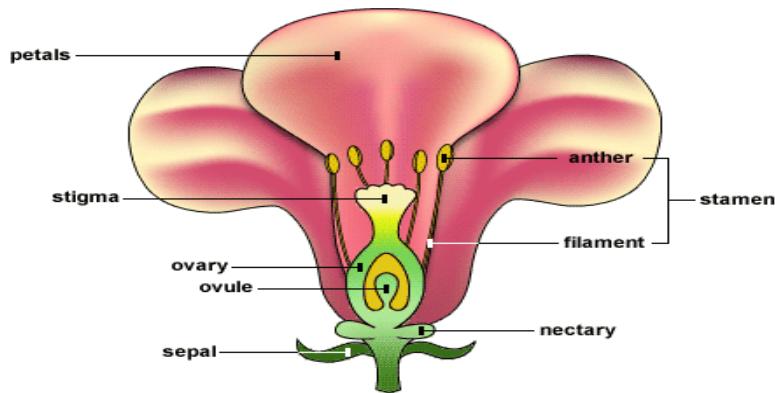
Mention one importance of buds to plants.

- Buds develop into branches and flowers.

FLOWERS

- The flower is the reproductive part of a flowering plant. Process of reproduction takes place.

Drawn structure showing parts of a flower



Write the Functions of the parts of the flowers.

Petals, the brightly coloured petals help to attract pollinating agents such as insects.

Sepals- Green sepals help to manufacture food for the plant.

- Protect the inner parts of the flower at an early stage (bud stage)

Stigma. Its function is to receive pollen grains

Style: is a passage of the pollen grains to the ovary.

- The style also supports / holds the stigma in position.

Ovary. It produces the female gametes called ovules.

- A fertilized ovary develops into a fruit.

Filament. Holds the anther in position

Anthers. Produce and store pollen grains.

Write one importance of flowers to plants.

- Flowers help plants to reproduce

Write any two importance of flowers to people.

- Some flowers are eaten
- Some flowers are used for decoration.
- Flowers are used to make perfumes.

Of what importance are brightly coloured petals to a plant?

- To attract the insects pollinators.

POLLINATION

- Pollination is the transfer of pollen grains from the anther to the stigma of a flower on a plant.

NOTE

- Pollination helps to allow fertilization in plants
- The pollen grains are the male gametes while the ovules are the female gametes in plants.

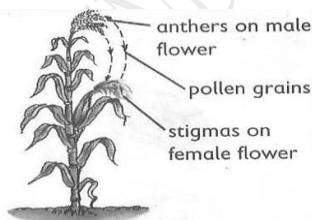
Give two types of pollination

- Self-pollination
- Cross pollination

What is Self-pollination?

- Self-pollination is the transfer of pollen grains from the anthers to the stigma of flowers on the same plant

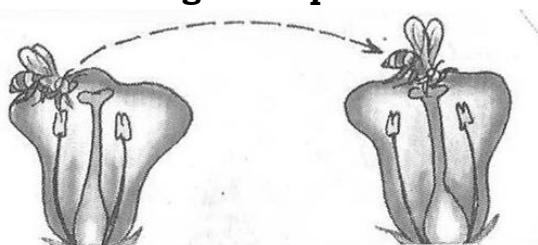
Structure illustrating self-pollination



What is Cross pollination?

- Cross-pollination is the transfer of pollen grains from the anther heads of the stigma of a flower on another plant but of the same type or species.

Illustration showing cross-pollination



Name the agents of pollination.

- Wind
- Insects
- Birds

Note:

- Insects that pollinate flowers include; bees, butter flies and moths which pollinate flowers at night.
- Birds that pollinate flowers include; sun bird and humming birds

State any two characteristics of insect-pollinated flowers.

- They have scent.
- They have brightly coloured petals.
- They produce sticky pollen grains.
- They have sticky stigma.

Give any two characteristics wind pollinated flowers.

- They produce a lot of pollen grains,
- They have no scent,
- They have dull petals
- They don't produce nectar.

SEEDS

- A seed is a fertilized ovule.
- A seed develops into a young plant or a seedling under favourable conditions.

What are Dicotyledonous Seeds?

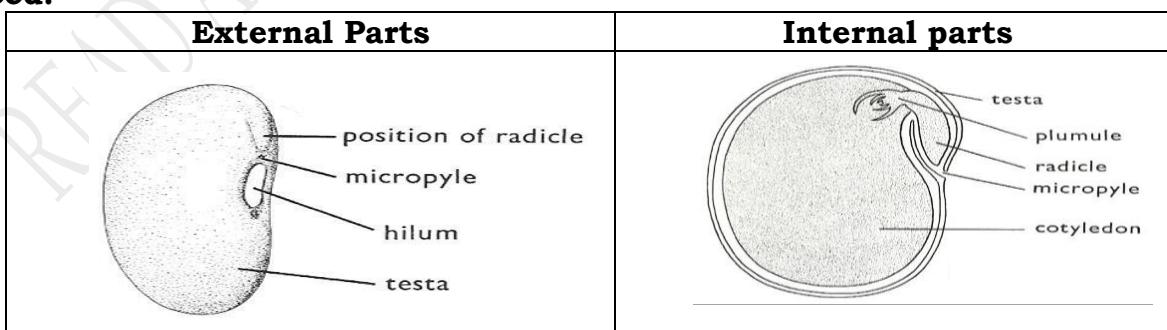
- ❖ Dicotyledonous seeds are seeds with two cotyledons

Mention any three examples of dicotyledonous seeds.

- Bean seeds
- Peas
- Groundnut seeds

NB: All dicotyledonous seeds undergo epigeal germination.

A drawn structure showing parts of external and internal parts of a bean seed.



What are monocotyledonous seeds?

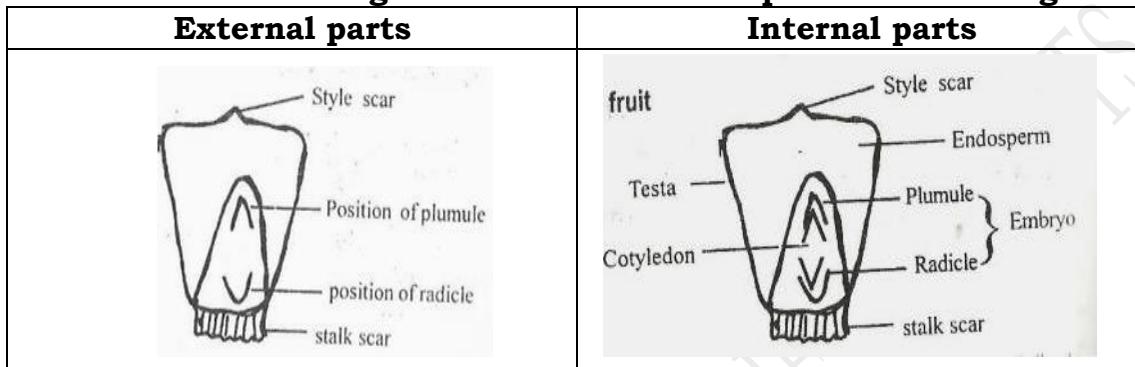
- Monocotyledonous seeds are seeds with only one cotyledon.

Give any two examples monocotyledonous seeds.

- Maize,
- Millet,
- Sorghum, etc.

NB: Monocotyledonous seeds undergo hypogea germination.

Drawn structures showing external and internal parts of a maize grain



Write down the main Functions of the following parts.

a) Seed coat (testa)

- It protects the inner delicate parts of the seed.

b) Cotyledon

- Absorbs stored food from the endosperm to the embryo during germination.

c) Endosperm

- Stores food in monocotyledonous seeds.

d) Plumule

- It grows into shoot system

e) Radicle

- Grows into the root system.

f) Micropyle

- Is a passage of air and water to the seed embryo.

Mention one importance of seeds to plants.

- Seeds help plants to multiply in number.

Give two importance of seeds to people.

- Seeds are eaten as food.
- People sell seeds and get money.

Why is a maize grain called a fruit?

- It has two scars.

GERMINATION IN PLANTS

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

Name two types of germination.

- Epigeal germination
- Hypogeal germination

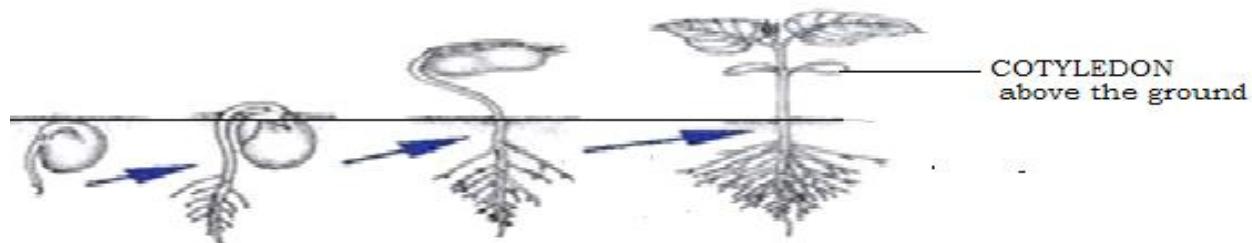
What do you understand epigeal germination?

- Epigeal germination is a type of germination where the cotyledon comes out of the ground.

NOTE

- Epigeal germination is a common characteristic of dicotyledonous seeds
e.g. Beans, soya beans, groundnuts.

Drawn structure showing the different stages in Epigeal germination.



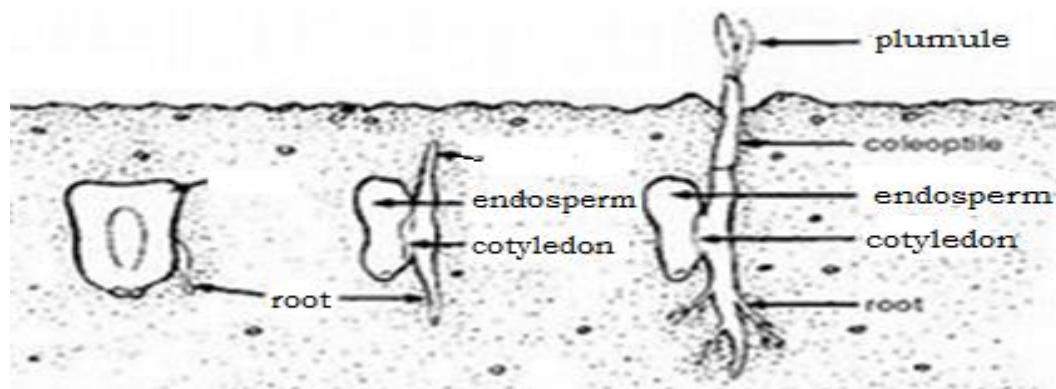
Define the term hypogeal germination.

- This is a type of germination in which the cotyledon remains under the ground

NOTE

- This type of germination is a common in monocotyledonous seeds **e.g.** maize, millet, rice, sorghum

Stages involved in hypogeal germination



Name three Conditions necessary for seed germination.

- Oxygen
- Water
- Optimum temperature.

Define Seed viability.

- Seed viability is the ability of a seed to germinate under favourable conditions.

Give the meaning of the terms below.

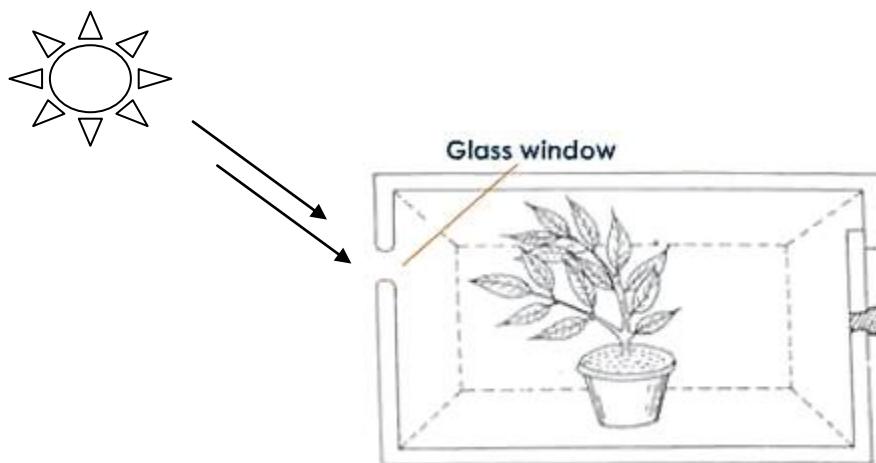
a) Tropism:

- Tropism is the plants growth movement in response to stimulus (change in the environment)

b) Phototropism

- This is the plant's growth movement towards the source of light.

Illustration:



c) Hydrotropism

- This is the plant's growth movement towards the source of water.

d) Geotropism:

- This is the plant's growth movement towards the direction of gravity force.

e) Thigmotropism:

- This is the plant's growth movement in response to the direction of touch.

f) Chemotropism

This is the plant's growth movement towards the source of chemical.

How is a fruit different from a seed?

- A fruit is a fertilized ovary while seed is fertilized ovule.

SEED AND FRUIT DISPERSAL

What is dispersal?

- Dispersal is the scattering of seeds / fruit from the parent plant to other areas.

Identify any two agents of seed and fruit dispersal.

- | | |
|---|--|
| <ul style="list-style-type: none"> • Animals • Wind | <ul style="list-style-type: none"> • Flowing water • Self-dispersal or explosive mechanism |
|---|--|

Give any two importance/advantages of seed and fruit dispersal.

- Dispersal enables plants to colonize new areas
- Dispersal reduces competition for light and the nutrients among plants.
- Dispersal increases the chances of the plant survival.

Write down four types or mechanisms of seed dispersal.

- | | |
|--------------------|------------------------|
| ▪ Wind dispersal | ▪ Water dispersal |
| ▪ Animal dispersal | ▪ Explosive mechanism. |

State two characteristics of seeds dispersed by animals

- They have juicy mesocarps
- Some have hook-like structures to attach them on the animals' bodies
- Some have hard seed coats to protect them from the digestive juices.

Identify any two examples of seeds dispersed by animals.

- Mango fruit
- Guava fruit
- Jack fruits
- Avocado fruit etc.

Mention any two characteristics of seeds dispersed by wind.

- Many are small and light to be easily carried by wind.
- Some like jacaranda seeds have wing-like structures for floating in air.
- Some like a dandelion have a parachute hair structure
- Some have a tuft of hair e.g. cotton seeds

Note:

- Seeds dispersed by **explosive mechanisms** split their pods when ripe and disperse their seeds.
- These include; castor oil, peas and beans.

Give one characteristic of Seeds dispersed by flowing water

- These seeds have numerous air spaces with an air tight covering

Examples include; Water lilies and coconut fruits.

NON-FLOWERING PLANTS

- Non-flowering plants are groups of plants that do not bear flowers.

Name two groups of non-flowering plants.

- Spore producing.
- Coniferous plants.

Name two examples of spore producing plants

- Liverworts
- Mosses
- Ferns

Conifers or Coniferous plants:

- Coniferous plants are non-flowering plants that reproduce by means of seeds produced in hard structures called **cones**.
- Conifers have roots, stems and small needle shaped leaves

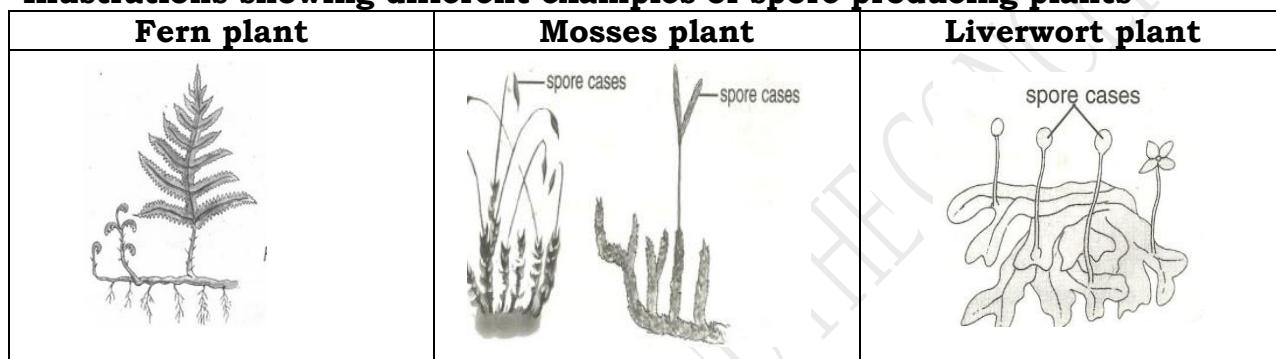
Give two examples of coniferous plants.

- Pines
- Cedar tree
- Podo tree
- Cypress
- Fir tree
- Ginkgo

Mention any two importance of conifers.

- Some are planted in compounds to provide shade and also act as wind breaks.
- Some conifers are planted around the compounds and farms to act as live fences
- They are sources of soft wood timber

Illustrations showing different examples of spore producing plants



NOTE:

- All spore producing plants are green and therefore able to make their own food.

PLANT PROPAGATION

- Propagation is a way obtaining a new plant from an existing plant.

Name two types of propagation.

- Natural propagation** (seed propagation) – involves the use of seeds for reproductive part of a plant
- Vegetative propagation (artificial propagation)**

- This refers to asexual reproduction in which part of a plant used to obtain a new plant is not from a flower (productive part)

Mention two types of vegetative propagation.

- Natural vegetative propagation
- Artificial vegetative propagation

Give four examples of natural vegetative propagation.

a) Use of suckers

- Some plants are propagated using suckers such as; bananas, pineapple and sisal

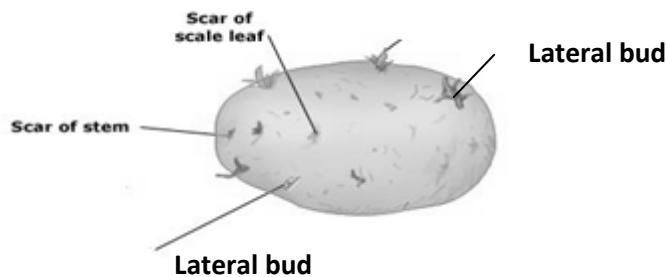
A structure showing a sucker of a banana plant



b) Use of tuber

- Some plants are propagated using tubers such as; Irish potatoes, cocoyam.

A structure showing parts of stem tuber.



c) Use of corms

- Some plants are propagated with the help of corms (kind of underground stems) e.g coco yams, gladiolus and crocus.

Draw a structure showing coco yam and an Irish potato

d) Use of rhizomes

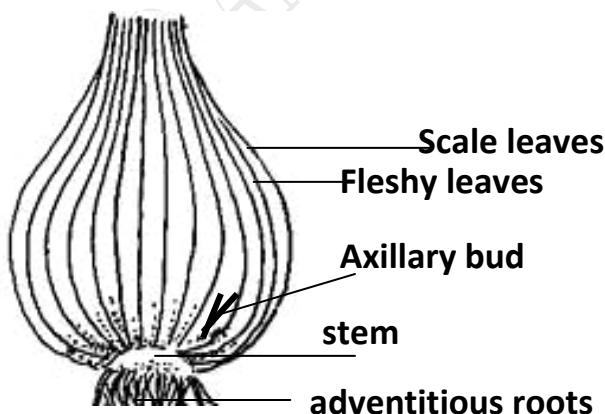
- Some plants are propagated using the rhizomes.
- Rhizomes are swollen underground stems with stored food and grow horizontally.

Example include, ginger, zoysia grass and turmeric.

e) Use of bulbs

- Some plants are propagated using bulbs such as onions
- A bulb is a short, thick underground stem with scaly leaves containing stored food.

Structure of a bulb (onion)



Mention the functions of the following parts.

- **Foliage leaves:** These leaves make food for the plant.
- **Storage / Fleshy leaves:** They store the manufactured food.
- **Axillary buds:** They develop into new shoots.
- **Stem:** It holds all the leaves together.
- **Scale leaves:** They protect the fleshy leaves.

Mention any two examples artificial vegetative propagation.

- By stem cutting e.g. cassava, sweet potatoes and sugar cane.
- By layering
- Marcotting
- By budding
- By grafting

THEME: SCIENCE IN HUMAN ACTIVITIES AND HUMAN OCCUPATION
TOPIC: KEEPING CATTLE

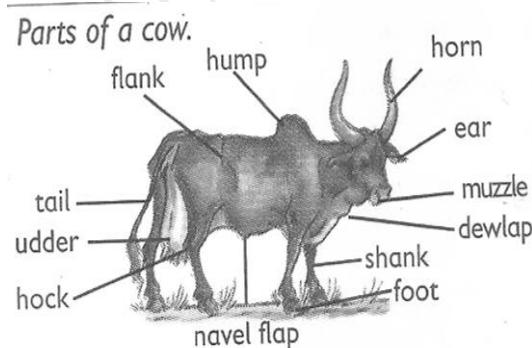
- Keeping cattle refers to the act of rearing bulls, cows, calves and heifers.
- Animal husbandry refers to the act of rearing farm animals or livestock.

Give any two farm animals.

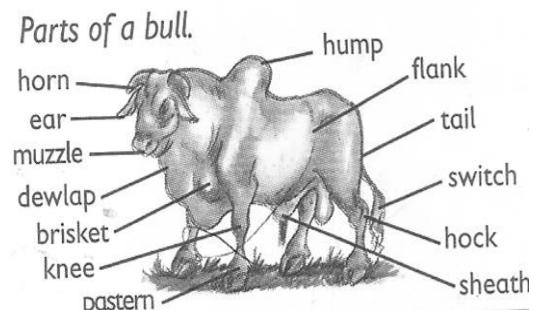
- Pigs
- Sheep
- Goats
- Cattle
- Rabbits.

A drawn structure showing the external features of a cow and a bull

Cow



Bull



Mention any two importance of keeping cattle.

- Cattle provide people with milk and meat which are sources of proteins.
- Waste materials (dung) from cattle acts as natural manure used to improve soil fertility
- Hooves and horns are used to make enamel items like plates and cups.
- Hides from cattle are used in making leather products.
- Cow dung can be used in building local houses and making biogas
- Keeping cattle is a source of employment.

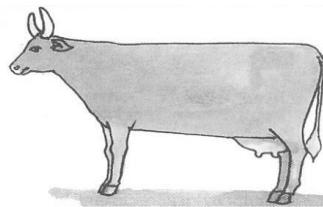
Name three types of cattle

- Dairy cattle – kept for milk production
- Beef cattle -- kept for beef (meat) production
- Dual-purpose cattle -- kept for the both milk and meat production.

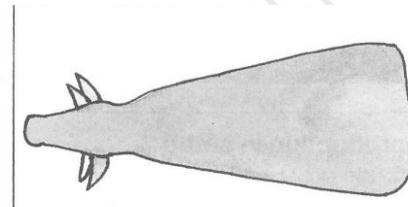
Give any two characteristics of dairy cattle.

- They produce much milk.
- They have a triangular shape.
- They have big(large) udders
- They have small necks.
- They have long legs.

A drawn illustration showing body shape of dairy cattle.



A dairy cow seen from the side



A dairy cow seen from above

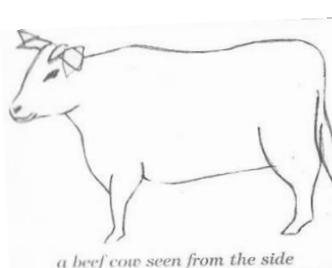
Mention the examples of dairy cattle include.

- Friesian
- Ayrshire
- Guernsey
- Jersey
- Jamaican hope
- Brown Swiss cattle

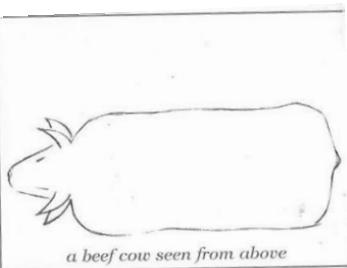
State any two characteristics of beef cattle.

- They have a rectangular shape/block shape.
- They produce a lot of meat.
- They have small udders.
- They have thick muscles.
- They have short legs.

An illustration showing the body shape of beef cattle



a beef cow seen from the side



a beef cow seen from above

BREEDS OF CATTLE

- A breed of cattle is a family or group of cattle having specific characteristics.

Identify the three types of Breeds of cattle.

- Local breeds of cattle (indigenous)
- Exotic breeds of cattle
- Cross breeds

Identify any two examples of local breeds of cattle.

- Zebu cattle
- Boran cattle.
- Nsagala or sanga cattle
- Ankole cattle

State any two characteristics of local breeds of cattle.

- They are resistant to tropical diseases
- They have the ability to walk long distances
- They can withstand harsh weather conditions

Give any two disadvantages of local breeds of cattle.

- They produce less meat and milk
- They have a slow growth rate
- They produce less products (meat and milk)

Exotic breeds of cattle

- These are groups of cattle breeds imported into East Africa.
➤ They are either dairy, beef or dual-purpose cattle

Examples include;

- Friesian, Ayrshire, Guernsey Jersey, Jamaican hope, Brown swiss, Aberdeen Angus, Hereford, Charolais, Shorthorn, Galloway and American beef master

Suggest any two characteristics of exotic breeds of cattle.

- They grow quickly with no horns
- They are not resistant to diseases.
- They need a lot of attention or care.
- They produce high quantities of milk and beef
- They need a lot of water and good pasture

How can local breeds of cattle be improved?

- By cross breeding

BREEDING IN CATTLE

What is breeding?

- This is the act of maintaining or improving the desired characteristics in animals/Mating of animals in a selected manner.

Give any two types of breeding.

- Line breeding
- Inbreeding
- Cross-breeding
- Out breeding
- Upgrading

What do you understand by;

- 1) **Line breeding** is the mating of fairly related animals such as cousins.

- 2) **Inbreeding** is the mating of very closely related animals such as a brother and a sister
- 3) **Out breeding** is the practice of mating distantly related animals.
- 4) **Cross breeding** is the practice of mating a local breed with an exotic breed of cattle..
 - Cross-breeding helps to improve animals with poor qualities
- 5) **Upgrading:** this is the act of improving upon the qualities of one breed by using a male animal of superior qualities several times.

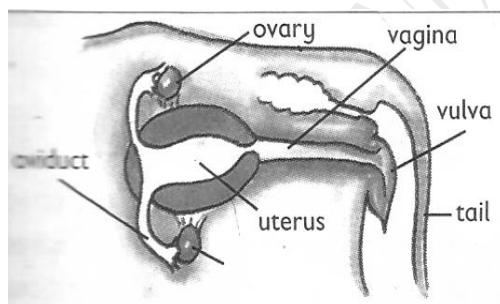
What are the importance (advantages) of breeding?

- Breeding helps to improve animals with poor qualities
- Breeding helps to obtain hybrids.
- Breeding helps to maintain good characteristics in animals

REPRODUCTION IN CATTLE

- **Reproduction** is the act of producing offspring.
- Cows undergo sexual reproduction which involves mating and production of gametes.
- **A gamete** is a reproductive cell.

The reproductive system of a cow



Mention the functions of different parts

Vulva: receives and guides the penis

Vagina: it's where semen is deposited

Cervix: closes the lower end of the uterus during pregnancy

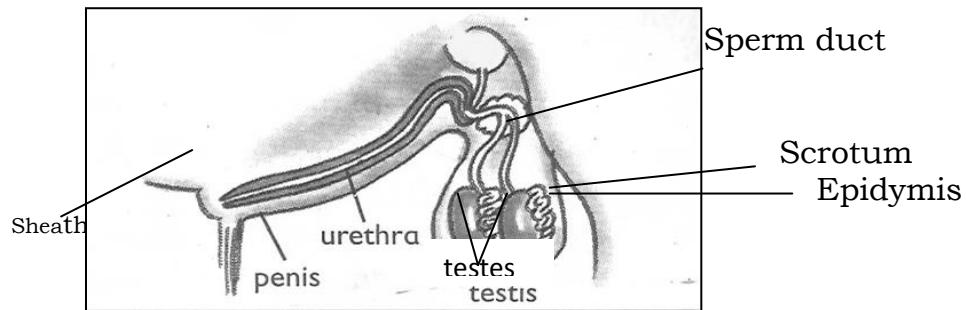
Ovary: produces the ova and hormones that help to control the sexual cycle

Ova: are the reproductive cells produced by the ovary

Oviduct/fallopian tube: Is the place where fertilization takes place.

Uterus: it's where implantation takes place (development of the foetus)

Reproductive system of a bull



Functions of parts

Testes- produce sperms

Sperm ducts – carry sperms

Urethra– passes out urine and sperms

Penis – delivers semen in the vagina of a cow

HEAT PERIOD AND INSEMINATION (SERVICES)

What is Heat Period (oestrus)?

- This is the time when a cow is in need of a bull for mating.
- Mating takes place only when a cow is on heat.

Identify any two signs of a cow on heat.

- The cow becomes restless
- The cow mounts other cattle and stands still when bulls mount it
- The cow urinates frequently
- There is a mucus discharge from the vulva

What is insemination (service)?

Insemination or service is the act of depositing sperms into the reproductive organ a female animal (cow).

Identify two types of insemination.

- Natural insemination
- Artificial insemination

Define natural insemination.

- Natural insemination is when a male animal (bull) deposits sperms into the vagina of a female animals (cow)

Mention two advantages of natural insemination.

- Natural insemination saves time
- It does not need a trained inseminator in order to carry it out.

Give any two disadvantages of natural insemination.

- More sperms are wasted in one cow.
- It's very expensive to buy and maintain a bull
- Big bulls can cause injuries to weak cows
- Once the bull dies, sperms are also lost.

Give the meaning of Artificial insemination.

- Refers to the act of depositing semen in the vagina of a female animal of (cow) by the help of a trained veterinary officer.

- Sperms are deposited into the vagina using an **insemination syringe**.

State any two advantages of artificial insemination.

- It reduces the cost of keeping many bulls on the farm,
- It's cheaper to buy semen than buying and maintaining a bull.
- It prevents injury to small cows and heifers by bigger or heavy bulls.
- It helps to control inbreeding and unwanted pregnancies in cattle
- It promotes selective breeding.

Write down any two disadvantages of artificial insemination.

- It's difficult and expensive to maintain proper storage of sperms.
- It can't be applied to animals whose signs of heat can't be easily identified.
- It requires a trained experienced inseminator
- Animals are denied chance to enjoy mating

What is fertilization?

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

NOTE

- A gamete is a reproductive cell.
- The female gamete is called **Ovum**
- The male gamete is called **a Sperm**.
- After fertilization, the zygote develops into an embryo.
- The embryo develops into a foetus and finally into a calf.

Zygote → Embryo → Foetus → Calf

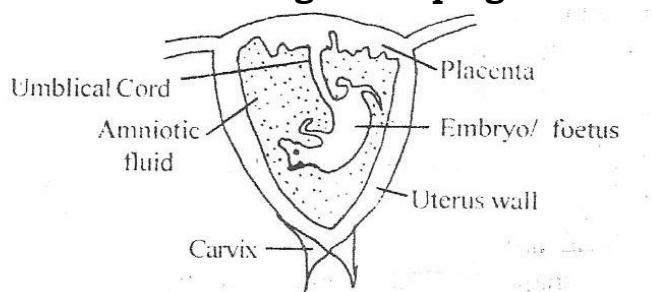
Implantation

- This is the attachment of the foetus to the walls of the uterus.

Gestation period

- This is the time between conception and giving birth.
- The gestation period of an in-calf is 270-280 days or nine months.
- An in-calf is a cow that is pregnant.

An illustration showing developing foetus



Note:

The placenta supplies oxygen and digested food to the foetus and also stores water from the foetus temporarily.

Umbilical cord is a passage of food and oxygen to the foetus

Umbilical cord also transports wastes from the foetus to the placenta.

Amniotic fluid acts as a shock absorber for any external pressure.

What is steaming up?

- This is the feeding of an in-calf on foods rich in protein. It is normally done during the last two months.

Why steaming up/advantages of steaming up

- It encourages the foetus to grow healthy.
- It builds a cow's body in preparation for calving (parturition)
- It increases the manufacture of colostrums.
- It prevents low birth weight.
- It prolongs gestation period

What is Dry period in cattle?

- This is the time when a lactating cow is left without milking it in preparation to giving birth.

Give the meaning of Calving or parturition.

- This is the act of giving birth in cattle (cows).

Identify any two Signs of calving in cattle.

- The vulva swells and becomes red.
- The cow lies down most of the time.
- The udder and teats become swollen.

What is Colostrums?

- This is the first milk got from a cow which has given birth.

Why should calves be fed on colostrum?

- It has all food values needed by a young animal.
- It opens up the digestive system of a calf.
- It boosts the immunity of a calf since it is rich in antibodies.

Give three methods of grazing.

- Rotational grazing
- Zero grazing
- Herding or free range system

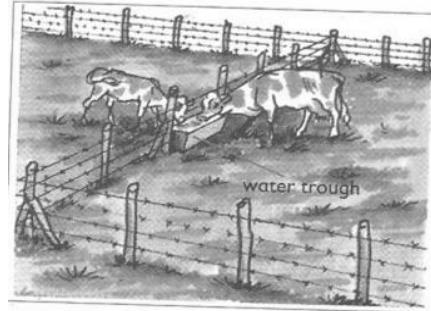
Identify three systems of rotational grazing.

- Paddock grazing
- Strip grazing
- Tethering

Paddocking

- This is when a farmer feeds his animals on pasture land divided into sections (paddocks) using a female
- Cattle are fed on grass in a paddock and when the grass is no longer enough they are moved to another paddock.

An illustration of paddock grazing



Mention any two advantages of paddock grazing.

- Paddocks help to control overgrazing
- Paddock grazing controls pests and diseases
- Paddock grazing enables the animals to have grass all the time.
- It lessens the labour used
- Paddocks help to control the spread of diseases

State any two disadvantages of Paddocking.

- The materials needed are expensive
- Animals have no choice of the type of plants to eat
- It requires a big piece of land
- The barbed wires can tear the skin of the animals

Strip grazing

- This when an animal grazes when it is tied on a tree/peg using a rope

Give any two advantages of strip grazing.

- Pasture is evenly used
- Diseases and vectors are controlled
- Labour is reduced on the farm

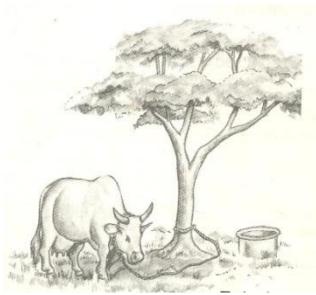
What are the Disadvantages of strip gazing?

- It's expensive to start and maintain
- It requires few animals to be kept

Tethering

- This when an animal grazes when it is tied on a tree/peg using a rope or chain
- This is the most common method used in East Africa.

A structure showing tethering method



Identify any two advantages of tethering method.

- It's cheap and appropriate to maintain
- No fencing is required
- Pasture chosen by the farmer is always the best

What are the Disadvantages of tethering?

- It can only work best for few animals
- Animal feeding is only limited to areas around the peg.
- It requires the farmer to keep transferring the animals when pasture reduces

HERDING AND ZERO GRAZING

Herding (free range grazing)

- This is a system where animals are left free to graze on different types of pasture as they are monitored by a herdsman.
- This system is mainly practiced by Nomadic pastoralists

Give any two advantages of free range system.

- Animals are able to do some exercises as they graze
- It does not require any fencing
- The animals graze on different pastures of their choice

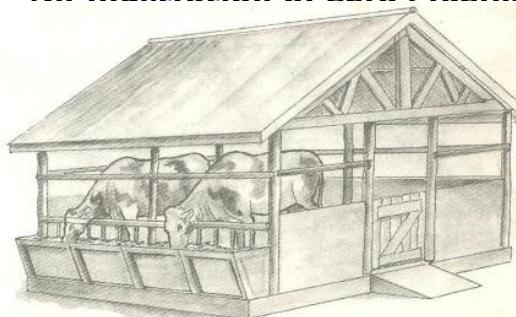
Identify any two disadvantages of free range grazing.

- Animals need a herdsman to look after them all the time
- Animals can easily stray and destroy farmer's crops
- Inbreeding is difficult to control

Zero grazing

- This is a system where animals are kept under a special structure and water or feeds are provided.
- Small cubicles are made for resting of the animals or feeding.

An illustration of zero grazing



State any two advantages of zero grazing.

- It's easy to collect manure (Farm Yard Manure)
- Animals are easy to control and monitor
- Feeds are not wasted since animals are given only what is enough.
- Animals are protected from bad weather like sunshine and heavy rains

Mention any two disadvantages of zero-grazing.

- It's very expensive to start and maintain
- The farmer gets over worked
- There is easy spread of diseases and pests
- It involves of either buying feeds or growing fodder crops
- Much labour is required to feed and monitor the animals

HOUSING OF CATTLE AND FENCING

Outline any two advantages of proper housing of the animals/cattle.

- To protect them from bad weather like heavy rain and strong sunshine.
- To protect cattle from thieves and attacks by wild animals
- To maintain their health and ease their feeding

Identify any two qualities of a good house of cattle (byre).

- Well ventilated for free air circulation.
- Has a strong floor made of concrete for easy cleaning
- Has a slanting to enable urine drain out.

Name the materials used to build cattle houses.

Wood, concrete, metals, bricks, plastics, stones etc.

Identify any three materials used when constructing artificial fences.

- Treated poles
- Barbed wires
- Bricks
- Wire nets
- Chain links, etc.

Give any two importance of fencing.

- Natural fences act as wind breaks thus controlling soil erosion
- Natural fences can maintain soil fertility by adding humus to soil
- Fencing controls the spread of pests and diseases to animals
- It also prevents animals from destroying people's crops
- It allows proper use of pasture and makes culling easy

Mention any two ways of identifying the animals.

- | | |
|---|--|
| <ul style="list-style-type: none"> • Branding • Ear Notching • Ear tagging | <ul style="list-style-type: none"> • Number lacing • Ear tattooing • Tail Bobbing |
|---|--|

Identify four farm practices carried out on cattle farms.

- | | |
|--|---|
| <ul style="list-style-type: none"> • Drenching • Deworming • Dehorning • Feeding | <ul style="list-style-type: none"> • Castration • Putting identifications • Spraying |
|--|---|

What is Castration?

- Castration is the removal testicles from male animals.

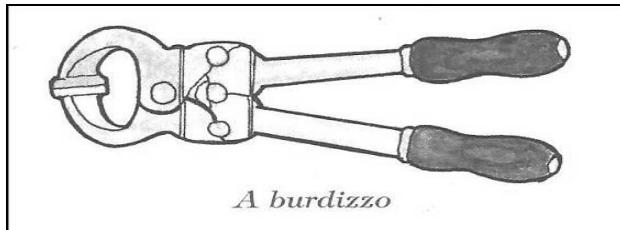
Give one reason why farmers castrate farm animals.

- To prevent unwanted pregnancies.
- To make male animals docile for easy handling.
- To prevent random mating.

Identify any two methods of castration.

- Open castration method.
- Closed castration method
- Use of the loop or elastrator method.

A drawn structure showing a burdizzo



Mention any three advantages of castration.

- Castrated bulls grow faster and fatten
- Castrated bulls are calm, humble and easy to handle
- Castration helps to control venereal inbreeding (unwanted pregnancies in the herds)
- Castration also helps to prevent diseases on a farm

State any two disadvantages of castration.

- Animals are denied chance to enjoy natural mating.
- There is loss of blood from the animal
- The wounds may become septic and attract germs
- It is painful to animals

DEWORMING AND DEHORNING

Define the term Dehorning.

- Dehorning is the removal of horn buds from the young animals to prevent growth of horns.
- Dehorning should be done when the calf is about 2-3 months.

Name three methods of dehorning.

- By use of chemical (done between 3-14 days)
- By use of a hot iron (between 7-30 days)
- Use of spoon dehorners. (between 1-2 month)

Suggest any two advantages of dehorning.

- It makes the animal easy to handle
- It increases the space in kraals, milking shades and in vehicles during transportation.
- Many animals can be kept in a small space
- It reduces the risk of injury among animals.

What is deworming?

- Deworming is the act of giving drugs to animals through the mouth to kill internal parasites

Mention two methods deworming.

- **Drenching** is the act of giving liquid medicine to animals through the mouth. It can be by using a drenching gun.
- **Dozing.** Is the act of giving solid medicine to animals in order to kill internal parasites

How is deworming important?

- Deworming kills internal parasites like tape worms etc.

Give the meaning of the following terms as used in cattle management;

a) Spraying

- This is the removal of ecto parasites on the body of an animal by sprinkling acaricides using a **knap sack sprayer or spray race**.

b) Dusting

- This means smearing the body of animals with powdered chemicals to kill ecto parasites.

c) Deticking

- This is the picking of ticks from the skin of animals using hands.

d) Dipping

- This means making animals to swim through water mixed with acaricides in a dip tank/pool.

Name two methods (types) of milking

- Hand milking
- Machine milking

NOTE

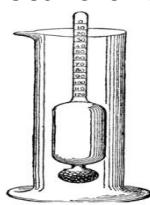
1. Before milking, all cows should be tested for mastitis and the cow discovered with mastitis should be milked last.

Diagram of a strip cup



2. The density of milk is measured using a lactometer

A drawn structure showing a lactometer



Give any two methods of preserving milk.

- Pasteurization
- Sterilization
- Boiling and quick covering

- Refrigeration

NB:

- *Sterilization* involves killing bacteria in milk with maximum boiling followed by covering it on cooling.
- *Pasteurization* involves strong heating and sealing milk before germs enter. This method was discovered by Louis Pasteur.

CATTLE PARASITES

What is Parasite?

- A parasite is an organism that depends on another organism for food and shelter.

Name two types of parasites.

- External parasites (ecto-parasites)
- Internal parasites (endo-parasites)

What are external parasites (ecto parasites)?

- These are parasites that live outside the body of a host. They suck blood from the animal.

Name two examples of external parasites.

- | | |
|---------|----------------|
| • Ticks | • Tsetse flies |
| • Lice | • Fleas etc. |
| • Mites | |

Note:

- ✓ Ticks suck blood from the animals and spread tick borne diseases such as;
 - East coast fever
 - Red water
 - Heart water.
 - Anaplasmosis
- ✓ *Tsetse flies* spread germs that cause Nagana or trypanosomiasis to cattle.

What are Internal (endo) parasites?

- These are parasites that live inside the body of the hosts and mainly in the intestines.
- They suck blood and feed on the digested animal's food. They are mainly worms.

Give any two ways of controlling cattle parasites.

- Spraying the animals using acaricides
- Practicing paddock grazing to avoid tick borne diseases
- Dipping cattle in a caricides
- De-worming cattle to kill intestinal worms

Mention any two causes of sickness in cattle.

- Lack of essential nutrients in their feeds
- Poor hygiene in the animal house.
- Overcrowding of animals

Outline any two Signs of a sick animal.

- Animals appears gloomy and restless
- Body temperature may be high or low
- It may pass out urine with strange colours
- Difficulty in breathing or even coughing
- Diarrhea or scouring may occur

Name of disease	How its spread and caused	Signs and symptoms	Prevention control and treatment
<u>Bacterial diseases</u>			
Anthrax	<ul style="list-style-type: none"> ✓ Caused by Bacteria ✓ Spreads through body contacts and contaminated feeds 	<ul style="list-style-type: none"> • High fever • Loss of appetite to graze. • Sudden death • Blood stained dung 	Bury deeply dead animals Burn the dead animals Vaccinate animals every year Separate infected animals
Mastitis	<ul style="list-style-type: none"> ✓ Caused by bacteria ✓ Spreads through body contact with an infected animal 	<ul style="list-style-type: none"> • Milk with blood stains or pus • Swollen and painful teats and udder. • A cow refuses to be milked and suckled 	Early treatment by treating using antibiotics Use a strip cup regularly
Pneumonia	<ul style="list-style-type: none"> ✓ Caused by bacteria ✓ Spreads through contaminated air and dirty living pens 	<ul style="list-style-type: none"> • Difficult breathing, coughing, • Nasal discharge • Loss of appetite • High fever 	Use well ventilated dry and clean pens. Treat the animal at the early stage of the disease
Tuberculosis	<ul style="list-style-type: none"> ✓ Breathing in air with tuberculosis bacterial ✓ Spreads through milk of infected cows 	<ul style="list-style-type: none"> • Coughing • Loss of weight • Loss of appetite 	Kill the infected animals Separate infected animals from healthy ones Have proper sanitation Early treatment using antibiotics
<u>Viral diseases</u>			
Foot and mouth disease	<ul style="list-style-type: none"> ✓ Spreads through sharing feeding containers ✓ Through body contacts with infected animals 	<ul style="list-style-type: none"> • Swollen teats and lameness • Blisters on top of hooves and mouth (muzzle) • Loss of appetite to graze • High temperature • Reduction in milk production 	Separate sick animals Vaccinate after every 6months Application of a quarantine.
Rinderpest	<ul style="list-style-type: none"> ✓ Spread through body contact with 	<ul style="list-style-type: none"> • Soars in the mouth • Sunken eyes 	Separate sick animals

	an infected animal	<ul style="list-style-type: none"> • Nasal discharge • Tears from eyes • High temperature • Diarrhea with blood stains 	Regular vaccination Slaughter the infected ones
• Protozoan disease			
Nagana (trypanosomiasis)	✓ Spreads through the bites of infected tsetse flies	<ul style="list-style-type: none"> • Loss of weight • Anemia • Loss of appetite • High fever 	Spread the tsetse flies using insecticides
East coast fever	✓ Through bites of infected ticks (brown ear tick)	<ul style="list-style-type: none"> • Nasal discharge • Diarrhea • Loss of appetite • High temperature • Weakness 	Dipping and spraying animals with acaricides to control ticks
Heart water	✓ Through bites of infected ticks (brown ear tick)	<ul style="list-style-type: none"> • Animals walk in circles. • Animals place their heads on objects • When the animal falls, legs keep paddling in air 	Dipping and spraying animals with acaricides to control ticks Treat early cases with tetracycline antibiotics and sulphadilimidine
Red water	Spread through tick bites (red ticks)	<ul style="list-style-type: none"> • High fever • Reddish urine due to damaged liver. • Animal licks soil 	Vaccinate regularly. Dip and spray with the acaricides to kill ticks.

STARTING A LIVESTOCK FARM

Identify any two requirements for starting a livestock farm.

- Land
- Capital
- Labour
- Market

Define Farm records.

- These are written information about all activities carried out on farm.

Give three importance of keeping farm records.

- Helps the farmer to plan and budget for the farm.
- To help the farmer know whether he is making profits or losses.
- To enable the farmer to make decisions

Identify any three types of farm records.

- **Feeding records:** These show the amount of feeds bought, consumed and methods of feeding.
- **Breeding records:** These include reproduction, birth or death rates.

- **Production records:** These show yields of various farm produce e.g. eggs, milk, meat etc.
- **Health records:** These include when and which animals were sick, what treatment they got or which ones to cull.
- **Labour records:** These include the number of farm labourers, type of work they do and their wages.
- **Marketing records:** These include where, when and what prices various products were sold.
- **Income and expenditures:** These are records of all the sales and purchases of the farm business.

THEME : THE HUMAN BODY
TOPIC : RESPIRATORY SYSTEM

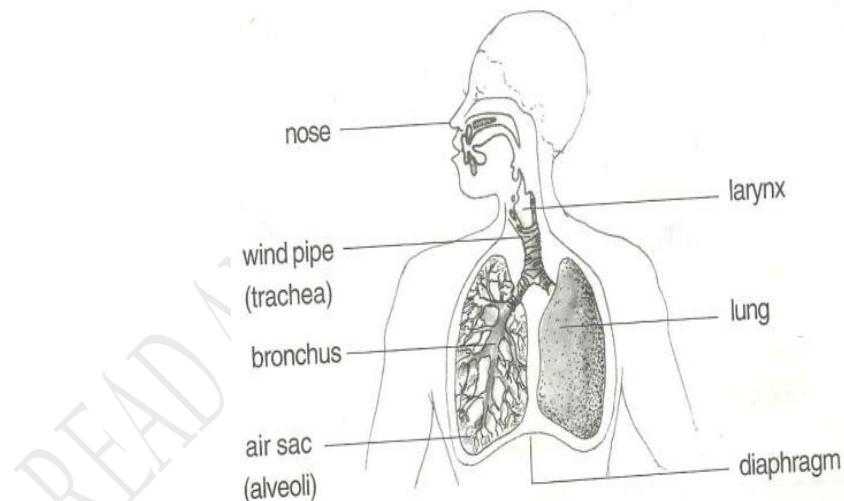
What is respiration?

- Respiration is the process by which the body uses food and oxygen to release energy, heat, carbon dioxide and water vapour.
- *Respiration* is the oxidation of food in the body cells to produce energy, carbon dioxide and water vapour.

Where does respiration takes place in the body?

- Respiration takes place in the body cells

A drawn structure showing the respiratory system



Write down the functions of the following parts of the respiratory system.

The nose:

- It contains mucus and tiny hair (cilia)
- Cilia traps dust that enters with air
- Mucus helps to moisten and warm air.

The wind pipe/trachea

- It's made up of soft bones called cartilage to keep it open all the time

- It also contains hair and mucus

The epiglottis:

- Closes to prevent the food from entering into the wind pipe on swallowing.

The lungs:

- This is the organ where gaseous exchange takes place.
- It has got air sacs (alveoli) with a network of blood capillaries to absorb oxygen and pass out carbondioxide.

Rib cage:

- Protect the lungs and heart against external harm.
- It's also covered with a pleural fluid to prevent friction between the thorax and lungs to the ribs.

Note:

- Gaseous exchange takes place at the air sacs.

State the importance of respiration to the body.

- Helps in the body to release energy
- Helps to release carbondioxide from the body

Give a reason why it's not advisable to breathe through the mouth.

- The air will not be moistened
- The will not filtered

How are cilia useful to people during breathing?

- Cilia traps dust that enters with air

How is a pleural fluid important?

- To prevent friction between the thorax and lungs to the ribs.

BREATHING

- Breathing is the act of taking in of oxygen and sending out of carbon dioxide from the body.
- Breathing involves exchange of gases in an organism

Name the two types of breathing.

- Inspiration (inhalation) and
- Expiration (exhalation)

Breathing in / inspiration / inhalation.

- Inspiration is the act of drawing in air into the lungs through the nose.
- The air we breathe in contains more oxygen than carbon dioxide.
- We breathe in to increase oxygen supply in the body

How is oxygen important in the body?

- Oxygen is used by the body to burn food and produce energy during respiration

Write down any two events during inhalation / breathing in.

- The diaphragm moves downwards. (Diaphragm contracts and flattens)
- Ribs move upwards and out wards.
- Lungs expand
- The chest increases in volume
- Air is drawn into the lungs.

Expiration / breathing out / exhalation

- This is the act of taking out of air from the Lungs through the nose.
 - We breathe out to reduce carbon dioxide in the body.
 - Air we breathe out contains more carbon dioxide than oxygen
 - During breathing out, we also lose excess heat and vapour from the body.

State any two events during expiration / breathing out / exhalation.

- The diaphragm moves upwards to its domed shape.
- The ribs move down wards and inwards
- The lungs reduce in size

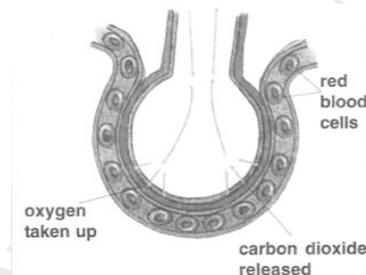
Where does gaseous exchange take place in the respiratory system?

- Gaseous exchange takes place in the alveoli and in the air sacs of lungs.

NOTE

- When blood reaches the alveoli, carbondioxide is lost and oxygen is added to blood.
- Oxygen is able to be added to blood and carbondioxide is lost by a process called diffusion.

An illustration showing gaseous exchange at the alveoli



Note:

- Alveoli are plural while alveolus is singular.

How are air sacs suitable for gaseous exchange?

- They have thin walls that allow easy gaseous diffusion.
- They are surrounded by a network of blood capillaries.
- They are many in number to provide a large surface area to ease gaseous exchange.

Summary of the composition of inhaled and exhaled air

Gas	Inhaled air	Exhaled air
Oxygen	21%	16%
Carbondioxide	0.03%	4%
Nitrogen	78%	78%
Water vapour	Less	More
Rare gases	0.97%	0.97%

Note:

- As we breathe out, more carbondioxide is expelled because some is added from the body cells.
- Nitrogen is left unchanged because it is not necessary in the body.
- We breathe out less oxygen because most of it is used by the body during respiration process.

Learner's activity

1. State two ways in which air sacs are adapted for exchange of gases.
2. Study the table below and answer the questions that follows;

Component	Inhaled air	Exhaled air
Oxygen	21%	16%
Nitrogen	78%	78%
Carbon dioxide	0.03%	4%

Briefly explain why;

- a) Exhaled air contains little oxygen
- b) Concentration of nitrogen remained unchanged
- c) Exhaled air contains more carbon dioxide

Diseases of the respiratory system

Diseases	Signs and symptoms	Prevention / control
Lung cancer (caused by smoking)	<ul style="list-style-type: none"> • Chest pain • High fever • Coughing 	<ul style="list-style-type: none"> • Avoid smoking tobacco • Seek medical treatment
Influenza (flu) (caused by virus)	<ul style="list-style-type: none"> • Difficulty in breathing • Constant coughing and sneezing 	<ul style="list-style-type: none"> • Drink a lot of fluids
Pneumonia caused by either bacteria or virus	<ul style="list-style-type: none"> • Difficulty in breathing • Coughing • Fever 	<ul style="list-style-type: none"> • Wear warm clothes during cold weather. • Treat using antibiotics.
Bronchitis (caused by bacteria)	<ul style="list-style-type: none"> • Difficulty in breathing 	<ul style="list-style-type: none"> • Avoid smoking • Avoid staying in ventilated places.
Tuberculosis. (caused by bacteria)	<ul style="list-style-type: none"> • Coughing for a longtime • Thick mucus spitting with spotted blood • Chest pain 	<ul style="list-style-type: none"> • Isolate the infected ones • Immunise using children BCG Vaccine • Avoid drinking unboiled milk.
Whooping cough (caused by bacteria)	<ul style="list-style-type: none"> • Blocked nose • Coughing spasm • Difficulty in breathing • Running nose 	<ul style="list-style-type: none"> • Drink fluids rich in vitamins • Immunise children with DPT vaccine. • Avoid overcrowded and poorly ventilated houses/places.
Asthma (allergies)	<ul style="list-style-type: none"> • Difficulty in breathing • Body weakness during cold 	<ul style="list-style-type: none"> • Go for medical attention • Keep away from sources

	<p>weather.</p> <ul style="list-style-type: none"> • Mucus flow 	<p>of allergies e.g. cold pollen grains.</p>
Diphtheria (caused by bacteria)	<ul style="list-style-type: none"> • Sore throat • Convulsion 	<ul style="list-style-type: none"> • Immunise the infants using DPT vaccine • Go for medical treatment in time.

Give any two disorders of the respiratory system.

- Choking
- Hiccup
- Sneezing

Mention any three habits that improve the working of the respiratory system.

- Avoid smoking
- By having regular physical exercises.
- Feeding on a balanced diet.
- Eat food with low and fat
- Keep away from dusty places

Identify the main products of respiratory system.

- Energy

Name the by-products of respiratory system.

- water
- carbon dioxide

Mention two raw materials for respiration.

- Food
- Oxygen

THEME : THE ENVIRONMENT
TOPIC : RESOURCES IN THE ENVIRONMENT

Define the term resources.

- A resource is anything that people use to satisfy their needs

How is soil used as a resource?

- It is used for growing crops
- Soil is used for building houses
- It is used for building towns and cities

Give the meaning of the term fossils.

- Fossils are remains of plants and animals that lived many years ago.

Mention any two uses of fossils.

- Fossils help geologists to determine the age of a place or rock.

- Fossils help geologists to know how different plants and animals have existed and changed.

How is water used as a resource?

- Water is used for cooking, washing etc.
- Water is used as a coolant in fractions.
- Running water is used to generate hydro electricity

How is the sun used as a resource?

- We get light from the sun that enable us to see
- Our skins make vitamin D using light from the sun
- Heat from the sun is used to sundry harvested crop produce
- Plants are a source of building materials e.g. poles, timber

How are plants used as resources?

- Some plants are a source of food to people.
- Some plants give us natural plant fibres like cotton, sisal, jute and linen.
- Some plants are a source of herbal medicine to cure certain diseases.

How are animals used as resources?

- Some animals like merino sheep provide wool, used to make cloths, suits, blankets, carpets, curtains, bed sheets etc.
- Some domestic animals provide skins and hides used to make bags, shoes, belts, etc.
- Cattle provide horns and hooves used to make glue.
- Some animals like oxen and donkeys provide labour.

What is air?

- Air is a mixture of gases.

What is wind?

- Wind is moving air.

How wind is useful

- Wind turns wind mills to produce electricity
- Wind drives wind mills to draw water from the underground and mill gains
- Wind helps in winnowing

Give any two importance of plants as resources.

- Some animals are eaten as food
- Plants provide wood used for building houses and making furniture.
- Some plants are sources of herbal medicine.
- Some plants are sources of fibre.

How are animals important as resources?

- Some plants are eaten as food.
- Some animals are used for transport.
- Some animals provide hides and skins used to make leather products.
- Their hooves are used to make glue and buttons.

Identify two types of resources.

- Renewable resources
- Non-renewable resources

What are renewable resources?

- *Renewable resources* are resources that can be naturally replaced.

Give any two renewable resources.

- Water
- Plant
- Animals
- Air
- Soil

What are non-renewable resources?

- *Non-renewable resources* are resources that cannot be replaced naturally when used up.

Identify any two examples non-renewable resources.

- Rocks
- Petroleum
- Clay Soil
- Minerals
- Sand

Name four resources from nonliving things.

- Soil
- Water
- Air and wind
- Rocks and minerals

Mention any two ways of conserving renewable resources.

- By carrying out afforestation
- By carrying out reforestation
- By protecting wildlife in game parks

Give any two ways of conserving nonrenewable resources.

- Soil erosion should be controlled.
- Soil should be kept fertile by using manure and fertilizers.
- Plastic wastes like broken Jerrycans, polythene papers should be recycled.
- Vehicles in dangerous mechanical conditions should be repaired to conserve fuel.
- Petroleum products should be used wisely to prevent further exploitation of oil

TERM 3

TERM 3

SCIENCE AT HOME AND IN OUR COMMUNITY

What is heat?

- Heat is the form of energy.

Mention any two major sources of heat energy.

- Sun is the main source of energy
- Fuels like fire wood, oil, petrol, coal, charcoal etc.
- Electricity like hydroelectricity, thermal electricity, nuclear electricity, solar electricity and static electricity

- Friction

Give any two uses of heat energy.

- We use heat energy to cook food
- We use heat energy to dry harvested crops
- Our skins use heat from the sun to make Vitamin D
- Heat helps to kill germs in food when we warm it before eating
- Heat helps to preserve food
- Heat energy helps to maintain our body temperature and keep us warm

State any two ways of using energy from wind

- Wind helps people in winnowing
- Wind energy is used by wind mills to pump water from underground
- Wind energy helps to run machines which are used for grinding cereals
- Wind helps to move boats on water bodies.

How can we use energy from water?

- Running water can be used to produce hydro electricity

(a) Housing standards**What are the factors to consider when choosing a site for a house?**

- The site should be well drained area
- It should not be next to the main road to prevent children from being knocked by motorists
- It should be near a school where children can study.
- The site should be near a trading centre where goods can be bought easily.

Mention four factors to consider when constructing a house.

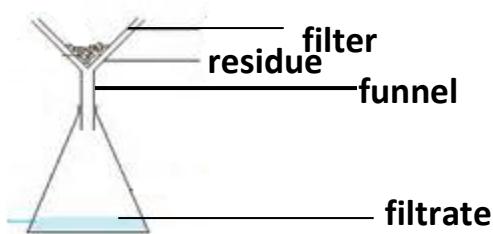
- A house should have proper ventilation to allow proper circulation of air.
- It must be damp proofed i.e. putting a damp proof course to prevent water from sipping up the walls of the house by capillary attraction
- The walls must be painted with shiny colour inside to reflect heat and keep it cool
- A good house should have a raised verandah to prevent water from entering inside
- A good house should have a good foundation.

Mention any two ways (methods) of making dirty water clean or pure.

- Filtering
- Boiling:
- Distilling
- Decanting
- Using chemicals

(a) Filtering

- This is the process by which solid particles are removed from water.
- Filtering can be done using a water filter or a sterilized piece of cloth.
- Water obtained after filtration is clear but it is not safe from germs.
- Filtered water is made safe for drinking by boiling to kill germs.



Filtered water is good for drinking after boiling because it contains minerals salts and it can be bad because it contains germs if not boiled.

(b) Boiling:

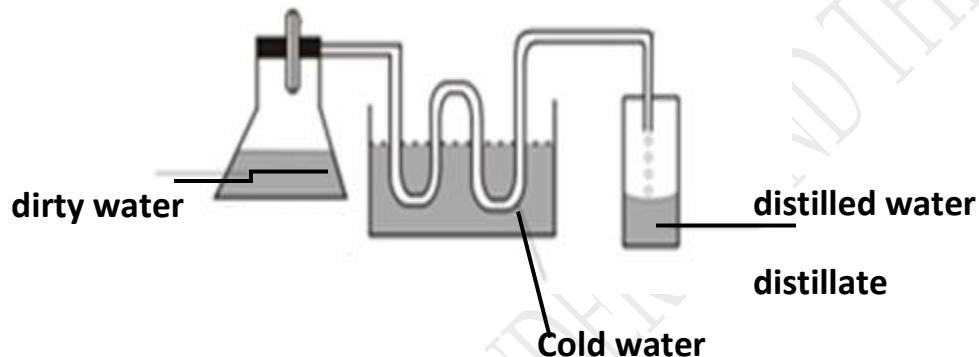
Clear water should be boiled in order to kill germs from it and make it safe.

Note: water from bore holes is sometimes drunk without boiling because it is free from germs. This is because soil particles filter it well.

However, it also sometimes gets contaminated by pipes and dirty containers.

(c) Distilling

This process can be used to make dirty water clean and safe for drinking.



Distilled water is good to drink because it is free from germs. It is bad to drink distilled water because it does not contain mineral salts.

(d) Decanting

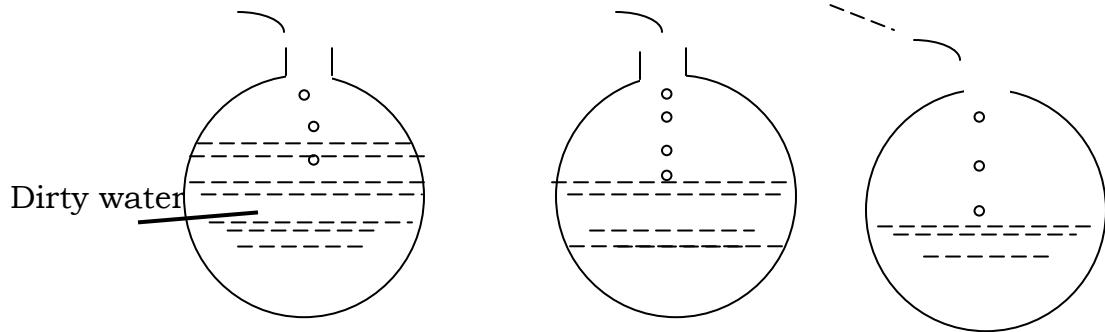
If water is very dirty, it can be made clean by decanting using the three pot system.

Procedure

- Get three pots
- Get dirty water and pour into the first pot and leave it to settle for a day
- After one day, all the dirty particles will decant and settle at the bottom of the first pot or container
- In the second day change into the second and also on the third day.

Illustration





e) Using chemicals

- Chemicals like calcium chloride, fluorine and potassium permanganate can be added into water to kill germs and make it safe for drinking.

Write down any two disadvantages of using chemicals.

- Chemicals are expensive to buy
- Chemicals do not make water clear
- Chemicals add a certain smell and taste to water

Name any two examples of impurities in water.

- | | |
|----------------|--|
| - Human waster | - Small animals e.g. microorganisms like germs |
| - Animal waste | - Plant remains |
| - Dirt | |

CLEANING CLOTHES IN A HOME

- Clothes should be kept clean in order to keep away germs and control the spread of germs.

Mention any three activities involved during cleaning clothes.

- | | |
|-----------|------------|
| - sorting | - wringing |
| - soaking | - drying |
| - washing | - ironing |
| - rinsing | |

SANITATION

What is sanitation?

- Sanitation is defined as the general cleanliness of places where we live or stay.
- Or: Sanitation is the general cleanliness of the public.

List down the activities that promote sanitation in a home

- Having latrines or toilets for people disposal of faeces and urine
- Having latrines dust bins for collecting rubbish and rubbish pits for disposal of rubbish and house hold refuse
- Slashing around our home to keep vectors like mosquitoes and tsetse flies away
- Draining away all stagnant water to prevent the breeding of mosquitoes
- Sweeping away all the rubbish in a compound to prevent contamination
- Having a plate stand to put utensils in order for them to dry after washing
- Sleeping in a well-ventilated house to allow proper circulation of air
- Protecting and cleaning around water bodies to prevent water contamination

NOTE: Sanitation promotes public cleanliness and involves community effort to disease prevention and control

LATRINES

- A latrine is a place where we defecate and urinate
- Latrines are very important to our health because they keep faeces and urine in one place where vector cannot bring it to our food and water.

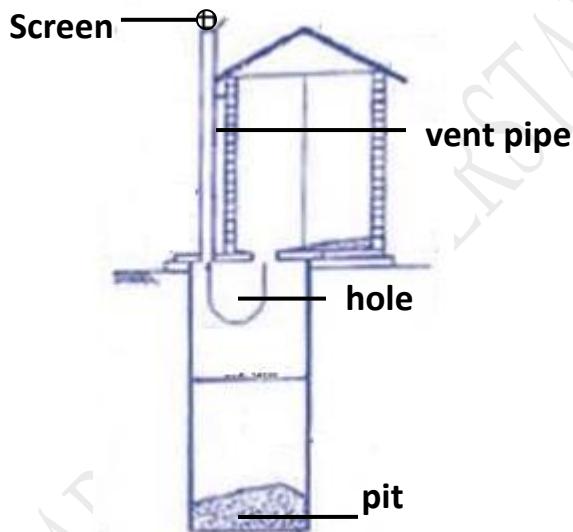
Types of latrines

a) A pit latrine

Give any two qualities of a well-built pit latrine.

- The pit must be deep enough (5m to 7m deep) smooth enough to clean
- The floor should be strong enough to stand on and easily
- The hole in the floor should be big enough to allow faeces and urine to pass but small enough to prevent children from falling inside.
- It should have the kid to cover the hole and keep flies out of the pit
- It should have a wall and a door for privacy
- It should have a roof to protect the floor and people from rain

b) A ventilated improved pit latrine (VIP)



Write down any two features of a VIP latrine.

- A VIP latrine has a screen which helps to trap houseflies until they die.
- A VIP latrine has a vent pipe which helps to let out bad smelling air
- The hole should be left open so that wind enters through the hole to drive away the bad smell through the vent pipe
- It has spiral shaped walls which helps to direct wind into the hole

NOTE: A VIP latrine is said to be ventilated because it has a vent pipe

A VIP latrine is said to be improved because it does not smell so much

It does not also have many house flies in it.

The site for a pit latrine

- It should be below the water source to prevent faeces from contaminating the water
- A pit latrine should be 30m away from a water source. This is to allow the water which comes into contact with faeces to filter in soil before it comes into a water source or to prevent water contamination.
- It should be 10m away from a house, kitchen, hotel, school, church etc. this is prevent bad smell from reaching people and flies from contaminating food.

Identify any three ways of maintaining a pit latrine.

- Sweep the floor clean.
- If the floor is cemented was it at least once a day.
- Remove cobwebs on the walls and roofs
- Damp the entire stool directly into the pit.
- Do not clean your anus using the walls after using the latrine.
- Smoke the latrine at least once a week to prevent bad-smell and keep away houseflies.
- In case of an ordinary latrine, keep the squat hole covered to prevent houseflies and bad smell from being let out.
- For a VIP latrine, do not cover the hole to allow free movement of air in and out.
- Do not pour disinfectants or paraffin into the pit as these may kill maggots and bacteria that reduce the volume of faeces in the latrine.

Toilets

- Toilets are found in modern houses in places where there is piped water
- Toilets use water to flush waste into a septic tank or into a sewage pipe.

Structure of toilet



Give any two ways of maintaining flush toilets.

- Keep the seat clean
- Flash a toilet after use
- If the flash does not work, pour a basin full of water into the bowl
- Use soft tissue or toilet paper for cleaning yourself.
- Do not use the toilet when it is blocked or where there is no water.

Identify any two problems faced by urban toilet systems

- lack of water for flushing
- The pipes always block due to using hard things to clean one-self.

- Damage on pipes or blockage of pipes may make sewerage to spill and make a given place dirty.

What are the advantages of toilets?

- They are user friendly i.e. even young children can learn how to use them easily.
- They are easy to clean.
- They can be accommodated inside the house or vehicles.

Give any two Disadvantages of toilets.

- They are very expensive
- They require a lot of water to function

TOPIC **ACCIDENTS AND FIRST AID**

What is an accident?

An accident is a sudden happening that causes harm to the body

Write down any two causes of accidents.

- | | |
|---|----------------------|
| - Playing on rocks | - Poor rocks |
| - Playing in water | - Driving when drunk |
| - Playing with sharp objects | - Ignorance |
| - Playing rough games | - Careless |
| - Vehicles in poor mechanical condition | - Playing near fire |

Give any examples of accidents.

- | | | |
|--------------------|------------------|--------------------|
| - Animals bites | - Electric shock | - Burns and scalds |
| - Falling down | - Near drowning | - Convulsion |
| - Cuts and bruises | - Choking | |
| - Knocks | - Fainting | |

FIRST AID

What is first aid?

- First aid is the first help given to a casualty before being taken to hospital.

Mention any two reasons for giving first aid.

- | | |
|-----------------|----------------------------|
| - Save life | - Prevent further injuries |
| - Stop bleeding | - Promote quick recovery |
| - Reduce pain | |

Who is a casualty?

A casualty is a person who has been involved in an accident and needs first aid.

Burns and scalds

What is a burn?

- A burns is an injury caused by dry heat

Name any two examples of dry heat.

- | | |
|---------------------|---------------------------------|
| - Fire | - Hot solids e.g. metals, rocks |
| - Read hot charcoal | |

What are the Causes of burns?

- Body contact with fire
- Contact with red hot charcoal
- Contact with high voltage electricity wires
- Contact with hot solids such as saucepans, hot plates, flat iron, iron boxes, etc
- Too much exposure to the sun rays
- Contact with chemicals such as acids

What is a scald?

- A scald is an injury caused by wet heat.

Give any two examples of wet heat.

- All hot liquids e.g. hot tea, hot water, hot porridge, milk etc.
- Steam

Give any two causes of scalds.

- Contact with steam
- Contact with any hot liquids such as Hot water, Hot soup, Hot milk, Porridge, Hot tea

Degrees of burns

Burns and scalds are described in degrees to tell how severe they are/were

Identify three types of degrees of burns.

- First degree burns
- Second degree burns
- Third degree burns

First degree burns

These are minor burns which don't cause blisters or broken skin.

Blister is an area of raised skin with water underneath

What is the first aid for first degree burns?

- Put the burnt or scalded area in clean cool water immediately after the accidents.

Second degree burns

These are burns which cause blisters on the skin

They are more severe than first degree burns

State the first aid for second degree burns.

- If the blister is not open/broken, leave it to prevent infection of the wound
- If the blister is open, wash the area with soap and clean cool water then cover with a clean cloth.
- Avoid putting things like fats, oils, coffee, dung and sugar because they can lead to infection.

Third degree burns

These are burns which make the skin blackened, destroyed appearing shiny white, charred and burnt very deeply.

These are the most severe burns

What is the First aid for third degree burns?

- First put the burnt area in clean cool water then cover it with a clean cloth
- Encourage the casualty to drink a lot of fluids to replace the lost water and minerals salts.

Give any two ways of preventing burns and scalds.

- Keep sources of heat away from children e.g. stoves, Match boxes charcoal hot plates.
- Cook from raised places about a metre from the ground
- Do not touch red hot charcoal, hot metals, hot plates and edges of sauce pans on fire.
- Do not put petroleum products in the house because they are highly flammable
- Avoid telling young children to cook food or boil water
- Use insulators while handling hot object
- Avoid getting into contact with steam from hot or boiling liquids
- Chemicals like acids should be kept out of reach of children and away from home.

FEVER AND CONVULSION

What does the term fever mean?

- Fever is a condition when the body temperature goes beyond normal.

NOTE

- ✓ The normal body temperature is **37°C or 98.4°F**
- ✓ Fever is not an illness but a symptom of many illnesses
- ✓ Sometimes high fever can cause convulsion

Give the meaning of convulsion.

- Convulsion is when the body shakes or jerks involuntarily.

What First aid would you give to a person with fever?

- Remove most of the person's clothes.
- Perform **tepid** sponging or put a wet cloth (cold compress) on the person's skin at the forehead, back and chest.
- Encourage the person to drink more fluids.
- Report the sick person to a health worker.

What First aid would you give to a person with for convulsion?

- Control the by standers to allow the victim get enough air exchange.
- Remove all tight clothes and loosen others
- Put an object in the victim's mouth to prevent him/her from biting the tongue.
- Clear the space where the victim is convulsing from
- When the fits or convulsion has stopped, put the victim in a recovery position.
- If we convulsion is violent, transfer the victim to hospital.

Drowning and near drowning

Give the meaning of the term drowning.

- Drowning means to die when the lungs are filled with water and therefore unable to breathe.

NOTE

Drowning does not occur in deep water only but also in swimming pools, bath tubs, basins of water, wells and streams

What is near drowning?

This is when the victim's lungs are filled with water but he/she is not yet dead.

NOTE

A person who has stopped breathing has only four minutes to live so that first aider should act very fast in order to save life.

What First aid would you give to a person with near drowning?

- Yell for help from people around
- Remove the person form water if it is safe for you i.e. when the person is smaller than you and you know how to swim
- If the person is bigger than you and you cannot swim throw something like a rope or piece of wood and pull the person out of water.
- Throw something that floats on water e.g. an empty jerrycan which some body can hold and float until saved by able people.
- If you have removed the person form water and he is breathing, choking or vomiting put him in a recovery position.
- If the person is not breathing, lie him down on his back till the person's head back and start a mouth to mouth breathing/resuscitation (kiss of life)

Mention any three ways of preventing drowning and near drowning.

- Children should not go to deep water without life savers.
- Don't leave both tubs filled with water
- Babies should not be left to play in basins full of water
- All septic tanks should be covered
- Large containers like drums, saucepans, basins, should not be left filled with water.
- Wells ponds and streams should be fenced.
- Young children should not go near big water bodies without grown up people to guide them.
- People using water transport should be provided with life jackets or life belts.

FAINTING

What is fainting?

- Fainting is the loss of consciousness for a short time.

What causes fainting?

Fainting is caused when the flow of blood carrying oxygen to the brain is reduced.

Or fainting is caused by reduced oxygen supply to the brain.

Write down four conditions that lead to reduced blood supply to the brain (fainting).

- Prolonged hunger
- Standing for too long
- Extreme sorrow or anger
- Strenuous exercises
- Long exposure to sunshine
- Fright
- Pain

Give any two First aid for fainting

- If the casualty is dizzy, help him sit down and to bend forward with head between the knees.
- Advise him or her to take a deep breath
- If the casualty faints still, lay him on his back with legs raised for easy flow of blood to the brain.
- Put the casualty in open air
- Free the neck, chest and waist of any tight clothing.
- If the person seems to be having difficulty in breathing, put him or her in a recovery position.
- Raise the person gradually to a sitting position.
- Don't give any drink to a casualty while still unconscious such things may choke the casualty.

Note: The main first aid for fainting is, make a person lie with the legs more raised than the head.

This is to enable blood containing oxygen to flow to the brain.

FOREIGN BODIES

What is a foreign body?

A foreign body is an external matter that enters the body through a natural opening or wound

Name the natural openings in the body that foreign bodies may enter.

- Nose
- Eyes
- Ears
- Mouth
- Vagina

Identify any two examples of foreign bodies.

- Small stones
- Seeds like ground
- Coffee berries
- nuts, beans
- Insects
- Soil
- Dirt
- Small stone

Foreign bodies in the eyes

The eye is a delicate organ which foreign bodies can easily damage it and even make it blind.

Insects, dust and dirt are the common foreign bodies that fall into our eyes.

What is the First aid for foreign bodies in the eyes?

- Wash the eye with plenty of clean water
- If the foreign body remains in the eye, gently wipe it away with the corner of a soft piece of cloth.
- Never use anything with sharp edges like a leaf or paper. These can damage the eyes and cause more pain.
- If the foreign body still remains in the eye, take the casualty to hospital.

Foreign bodies in the ear and nose

These may include small stones, seeds like beans, coffee, berries etc. they can be put in ears and nose usually by young children, small insects may also enter the nose and ears.

What is the First aid for foreign bodies in the ears?

- If the foreign body is an insect, pour water into the ear and make the victim bend and turn the head on one side, until the insect comes out with water.
- If the foreign body is not an insect, just take the victim to hospital. If you try to remove it, you may push it further and injure the ear drum.

What is the First aid for foreign bodies in the nose?

- If it is an insect, just blow the nose
- If it is not an insect, blow the nose too but if it fails to come out, take the casualty to hospital.

Foreign body in the throat

When something gets stuck in a person's throat, it blocks the air passage to the lungs. This is called choking. Choking can cause death.

What is the First aid for choking?

- Give several sharp blows on the person's back,
- If the above does not work, stand behind the person and wrap your arms around the person's waist with your fist press into the belly with a sudden upward jerk. This forces air from the lungs with the foreign body out of the throat.
- If the person is smaller than you, turn him/her upside down and give a sharp blow on his back.

Suggest any two ways of preventing accidents caused by foreign bodies

- Keep objects like buttons, beads, coins and seeds away from children.
- Food must always be chewed properly
- Avoid talking and laughing while eating.
- Teach children not to put objects in their ears, nose eyes, mouth, rectum and vagina
- Observe all good eating habits.

POISONING

Poison is any substance which once taken into the body may damage health or even cause death

Poison may also be introduced into the body by germs.

Write down any two Signs shown by those who have been poisoned.

- Vomiting
- The patient feels thirsty
- Loss of balance
- Mental confusion and coma leading to death
- Rapid breathing
- Fever and sweating
- Internal or external bleeding

What is the First aid for poisoning?

- Take the person to a health worker as soon as possible
- For poisoning with paraffin, petrol or bleach doesn't make the person vomit because this can damage the gullet or stomach.
- Make the person drink a lot of fluids like milk, juices and water to dilute the poison in the stomach.
- For any other type of poisoning, make the person vomit by giving him water with soap or placing your finger into his mouth or throat.

TOPIC
GROWTH AND DEVELOPMENT

What is growth?

- Growth refers to the increase in size.

What is development?

- Development refers to the increase in maturity.

PUBERTY**What is puberty?**

- Puberty is the period of time in which girls or boys become sexually mature.

NOTE

During puberty, boys and girls develop characteristics that get them prepared to have children.

These characteristics occur during adolescence.

ADOLESCENCE

Adolescence is a transitional stage between childhood and adulthood.

Adolescence varies from individual to individual but in general it begins at 15 years and ends at 21 years in boys and begins at 12 years and ends at 21 years in girls.

A boy or girl in this stage is called an adolescent.

An adolescent is a person who is between childhood and adulthood.

What do you understand by primary sex characteristics?

These are changes which involve the sexual organs being prepared for their function in reproduction

Mention any two primary sex characteristics in girls and boys.

In boys	In girls
- Penis increases in size - Testis begin producing sperms - Boys experience dreams	- Development of uterus and ovaries - Production of ova - Menstruation begins

What do you understand by Secondary sex characteristics (physical sex characteristics)?

These are changes in physical appearance that distinguish a grown up man from a mature woman.

Name any two Secondary sex characteristics (physical sex characteristics);

a) In boys

- Sweat glands become more active.
- Growth of public hair
- Hair grows under arm pits, chest and on the chin as beards
- The voice breaks and deepens
- General development of muscles showing masculine features

Note:

In boys, these changes occur due to the increased level of a hormone called testosterone produced by testis.

b) In girls

- Sweat glands become more active
- Growth of pubic hair
- Hair grows under arm pits
- Enlargement and rounding of the hips
- The girl's face becomes smooth and good looking
- Breasts develop, increase in size, look tender and attractive
- Development of skeletal and muscular structure showing feminine features

Psychological and emotional changes

These changes take place in the mind of an adolescent.

Mention four psychological and emotional changes in girls and boys.

- The adolescent becomes interested in members of the opposite sex.
- They react quickly to different situations i.e. a boy or a girl who was docile, humble. Cooperative becomes resistant, imitable and disobedient.
- They want freedom.
- They easily become angry and disappointed.
- They reject the rules of their parents.
- They want to be seen recognized as mature.
- They move in groups with boys and girls of their age called peer groups.

What do you understand by Out of step adolescent changes?

- These are changes which occur differently to different individuals in the same age group.

Write down any two Out of step adolescent changes in adolescent

- A boy who was previously short may suddenly grow taller than his age mates.
- A girl who was small may find herself fatter than her age mates.
- Anxiety may be produced in those who mature late and left behind by their age mates.
- Those who mature late may be influenced by those who mature early.

List down any three problems caused by adolescence stage.

- It brings conflicts between adolescents and their parents
- It brings conflicts between adolescents, culture and religion.
- It creates sexual conflicts among adolescents
- It creates forms of wishes, desires anxiety and fantasies caused by sexual maturation.

REPRODUCTION

Define the term reproduction.

- Reproduction is the process by which a living organism produces other organisms similar to its self.

Name the two types of reproduction.

- Asexual reproduction
- Sexual reproduction

What is asexual reproduction?

- This is a type of reproduction which does not involve gametes (reproductive cells).

In this reproduction, part of the organism separates off and grows into a similar individual or organism.

Write down four examples of a sexual reproduction.

- | | |
|-------------------|--------------------------|
| - Binary fission | - Budding |
| - Spore formation | - Vegetative propagation |

Give any two advantages of a sexual reproduction.

- The young plant uses food of the parent plant as it becomes established.
- Growth of the young plant is rapid since there is no resting in seeds.
- Only one plant is needed to produce the off springs.
- Some characteristics are maintained as the off spring is identical to the parent.

State any two disadvantages of a sexual reproduction.

- The young plant uses food of the parent plant as it becomes established.
- Growth of the young plant is rapid since there is no resting in seeds.
- Only one plant is needed to produce the off springs
- Some characteristics are maintained as the off spring is identical to the parents.

What are the disadvantages of a sexual reproduction?

- No new varieties are produced
- Off spring and parent compete for light and nutrients as they are many in a small area.
- Many individuals may be destroyed by disasters at once.
- Lack of a variety leads to poor resistance to disease and climatic changes.

Sexual reproduction

This is the type of reproduction in which gametes are involved.

Gametes are reproductive cells

In animals, gametes are produced by organs called gonads.

The **sperms** are the male gametes and they are produced by the testis.

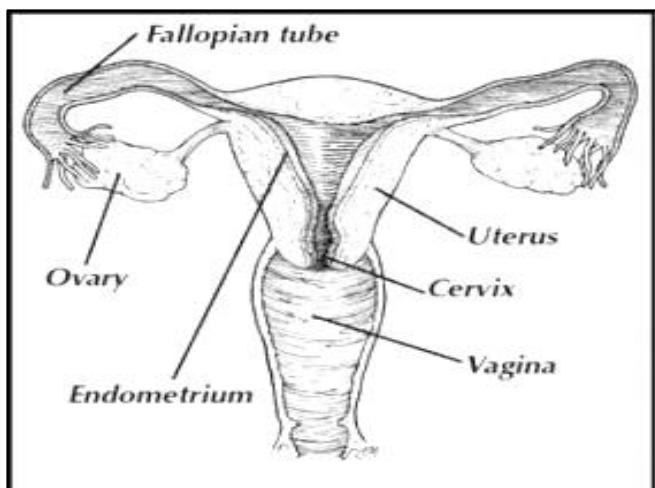
The **ova** are the female gametes and they are produced by the ovaries.

The **female gametes** in plants are the **ovules** which are produced by the ovary.

The male gametes in plants are the **pollen grains** which are produced by the anther heads.

Sexual reproduction in man

Cross section of the female reproductive organ



What are the main Functions of following parts?

a) Vagina

- ✓ It is the birth canal. It's where a baby passes during the time of birth.
- ✓ It is where sperms are introduced or deposited.

b) The cervix:

- ✓ This closes the lower end of the uterus when the woman is pregnant.

c) Uterus or womb

- ✓ It is where the embryo grows into a baby
- ✓ It helps in pushing the baby through the vagina during birth
- ✓ It is where conception and implantation take place

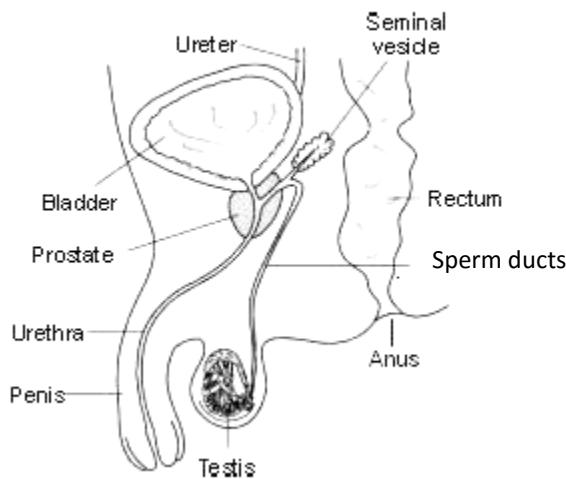
d) Oviduct (fallopian tube)

- ✓ This is where fertilization takes place
- ✓ It also allows the ovum or zygote to pass to the uterus

e) Ovaries

- ✓ The ovaries produce the ova (female gametes)
- ✓ They also produce a hormone

Cross section of the male reproductive organ



Give the mainfunctions of the parts of the following;

a) Scotrum

- ✓ The scotum protect the testis from harm.
- ✓ It regulates the temperature around the testis.

When the temperature is cold or low, the scotum shrinks and pull the testis upwards and towards the body.

When the temperature is high, the scotum relaxes and take the testis away from the body down wards

b) Testis

- ✓ The testis produce sperms (male reproductive cells)
- ✓ They also produce testaterine which is responsible for secondary sex characteristics and also increases sexual desire.

c) Epididymis

- ✓ It stores the manufactual sperms

d) Sperm ducts

- ✓ These carry sperms from the testis to the urethra

e) Urethra

- ✓ This is a passage of sperms from the sperm ducts to be introduced into the vagina
- ✓ It is where urine passes from the bladder and out of the body.

f) Seminal vesicle, cowpers and prostate glands

- ✓ These produce fluid called semen or seminal fluid semen assists sperms in movement.

g) Erectile tissue

- ✓ This helps the penis to erect

The erectile tissue has many blood spaces in which blood pressure is increased to cause erection

h) Penis

- ✓ The penis is used to deposit sperms into the vagina

Note: The most sensitive part on the penis is called glans.

Ovulation

What is ovulation?

- ✓ Ovulation is the process by which the ovary releases a mature ovum into the oviduct.

Ovulation takes place after every **12** to **14** days from the day of menstruation

What is Fertilization?

- ✓ Fertilization is the union of the nuclei of male and female gametes to form a zygote

A **zygote** is fertilised egg

Where does fertilization take place in man/animals?

- ✓ Fertilization takes place in the oviducts or fallopian tubes of animals

Mention two types of fertilization.

- ✓ External fertilization
- ✓ Internal fertilization

What is external fertilization?

- ✓ This is the type of fertilization which takes place outside the body of an animal.

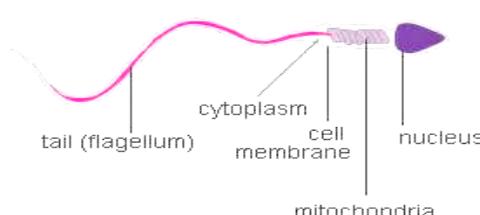
External fertilization is common in fish and amphibians

What is internal fertilization?

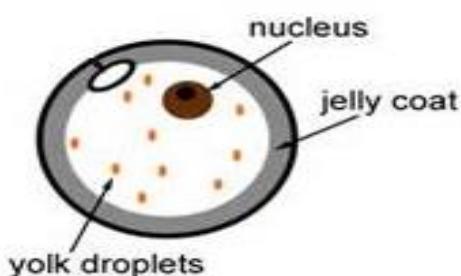
- ✓ This is the type of fertilization which takes place inside the body of an animal.

It occurs in mammals, birds, reptiles, insects etc.

Structure of a sperm cell



Structure of an ovum



What is menstruation?

- ✓ Menstruation is the monthly shedding of blood by the uterus walls when fertilization has not taken place.

NOTE

- ❖ Before ovulation, the uterus lining thickens with a layer of cells in which the ovum will sink after fertilization.
- ❖ If fertilization does not occur, the uterus lining breaks and flows through the cervix and vagina as blood, mucus and unwanted cells.
- ❖ Menstruation occurs once every four weeks or 28 days. It lasts for 3 to 5 days in normal cases.

Define the term implantation.

- Implantation is the process by which a zygote gets attached to the walls of the uterus.

What is Conception?

- Conception is the process by which the embryo implants itself and grows in the uterus.

NOTE

- ❖ When fertilization has taken place in the oviduct, the embryo begins cell division as it passes to the uterus.
- ❖ Conception takes place by the embryo growing finger like structures which attach it to the uterus.
- ❖ Conception takes place in the uterus.

Pregnancy (gestation period)

What is gestation period?

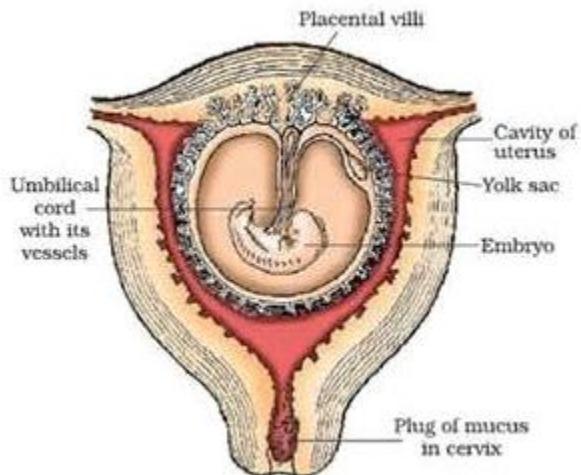
- ✓ Gestation period is the time taken from fertilization to birth.

*The gestation period in man is 9 months **10** days or **280** days*

Give any three signs of pregnancy.

- Menstruation stops
- Breasts grow bigger
- The abdomen enlarges and hardens by the fourth month
- Urinating frequently than normal
- Some women experience morning sickness during the first three months

Human foetus in the uterus



Give the main functions of the parts below.

a) Umbilical cord

- It transports food and oxygenated blood from the placenta to the embryo through the vein.
- It transports waste products and deoxygenated blood from the embryo to the placenta through an artery.

Note: The umbilical cord contains an artery and a vein

b) Placenta

- It stores food and oxygen before it is taken to the embryo
- It prevents blood of the mother from mixing with blood of the embryo or foetus
- It attaches the embryo to the
- It stores waste products from the embryo until they diffuse through to the mother's blood.

c) Amniotic cavity

- It protects the foetus from harm

d) Amnion

- Is it a sac for keeping amniotic fluids

What are some of the signs of danger during pregnancy?

- | | |
|---|---|
| <ul style="list-style-type: none"> - Excessive vomiting - Bleeding from the vagina - Severe fatigue - Prolonged anaemia | <ul style="list-style-type: none"> - Severe swelling of legs, face and hands - Pain in the abdomen - Severe headache |
|---|---|

Write down any two requirements for a pregnant mother/expectant mother

- | | |
|--|--|
| <ul style="list-style-type: none"> - She needs antenatal care - She needs good feeding - Regular physical exercises | <ul style="list-style-type: none"> - Adequate rest and sleep - Appropriate clothing - Proper personal hygiene |
|--|--|

Give any two responsibilities of family members towards a pregnant woman.

- Relieve her of heavy or tiresome house work.
- Give her psychological support, sympathy and kindness
- Assist her to pay regular visits to antenatal clinics for health advice and care.

Birth

Birth is the act of producing young ones in human beings.

What is Family Planning?

- Family planning is the using of birth control methods to plan when to have when not to have children in a family.

What is Child spacing?

- Providing of enough time between births of children in a family

Give any two reasons why people practice family planning.

- To allow the woman's body to rest and build up for the next pregnancy.
- It enables the family to have children in limited number that they can look after.
- It enables the born child to get enough care and parental love.
- It prevents the woman from getting worn out by child bearing.
- It prevents frequent births.

Write down any two reasons why parents have many children.

- Ignorance about family planning methods
- High infant mortality rate (High death rate of children)
- Desire for a certain sex of children
- The myth of male strength

What are the problems associated with having many children?

- The family may lack enough food
- The parents may fail to provide basic needs to the large number of children
- Children may not get enough parental care and love.
- The home may become congested by many people including children and parents.

Write two methods of family planning.

- Natural family planning methods
- Artificial family planning methods

Give any two natural family planning methods.

- Abstinence
- Coitus interruptus/Withdrawal of the penis from the vagina before ejaculation
- Rhythm
- Prolonged breast feeding

Explanation

Abstinence

This method involves avoiding sex completely. It is the best for school going students.

Withdrawal (coitus interruptus)

This is a method in which the man withdraws the penis from the vagina after sensing an ejaculation.

The rhythm

This involves studying the menstrual cycle and only have sex during safe days when the ovum is absent in the oviduct.

Prolonged Breast feeding

Breast feeding delays the starting of ovulation after birth.

This method varies from women to woman

State two advantages of natural family planning methods

- They are easy, cheap and cost free
- They don't cause side effects or complications

Write down two disadvantages of natural family planning methods.

- They are not as effective as artificial methods
- They require complete cooperation of both husband and wife.

Write down any two artificial family planning methods.

- | | |
|--|---|
| <ul style="list-style-type: none">- Birth control pills- Birth control injections- I.U.D or I.U.C.Ds- Condoms | <ul style="list-style-type: none">- Foams and jellies- Diaphragm- Vasectomy and tubal ligation- Norplant |
|--|---|

Explanation

1. Birth control pills

These are small tablets which contain hormones that prevent ovulation
One tablet is swallowed on a daily basis

2. Birth control injection

Here the hormone is given in form of an injection every three months

3. I.U.Ds or I.U.C.Ds

I.U.Ds – intra Uterine Devices

I.U.C.Ds – Intra uterine Contraceptive Devices

This method involves a small specially shaped plastic which is inserted into the woman's uterus by a nurse or doctor
The plastic device prevents implantation

4. Condoms

There are two types i.e. the male condom and the female one. The male one is fitted on an erect penis while the female condom is inserted into the vagina up to the cervix.

Condoms prevent sperms from being deposited into the vagina

5. Foams and jellies

These contain chemicals which kill sperms. They are inserted in the vagina before having sex.

6. Diaphragm (cap)

It is fitted inside the vagina to cover the cervix and prevent sperms from entering the uterus. Diaphragms are made of rubber but should be used with a sperm killing jelly.

7. Tubal ligation and vasectomy

Tubal ligation is the cutting of the oviducts and tying them through a simple operation.

Vasectomy is the cutting and tying of the sperm ducts through a simple operation

Illustrations



8. Norplant

This involves a simple operation where capsules containing hormones are inserted into the woman's upper arm. Each capsule lasts for a year.

Mention two advantages of artificial family planning methods.

- They are very effective
- They are commonly available

GIVE two disadvantages of artificial family planning methods

- They may cause health problems like over bleeding and high blood pressure
- They should be used with supervision of a health worker

SEXUALLY TRANSMITTED DISEASES (STDs)

Sexually Transmitted Diseases (STD's) are disease spread through sexual intercourse with an infected person.

They are also called Venereal Diseases (VDs) or Sexually Transmitted Infections (STI).

Mention the examples of common sexually Transmitted Diseases.

- | | |
|--------------------------------|----------------------------------|
| (a) AIDS caused by a virus | (f) Candidiasis by fungus |
| (b) Gonorrhea by bacteria | (g) Genital herpes by virus |
| (c) Syphilis by bacteria | (h) Genital warts by virus |
| (d) Chancroid by bacteria | (i) Pelvic inflammatory Diseases |
| (e) Trichomoniasis by protozoa | (PID) |

AIDS

Stands for Acquired (to get from)

 Immune (protected)

 Deficiency (lack of)

 Syndrome (a group of common signs and symptoms of other diseases)

AIDS is caused by a virus called **HIV** Human Immuno – deficiency Virus

HIV attacks the white blood cells leading the body to lose its ability to fight against infections.

HOW AIDS IS SPREAD:

- (a) Through sexual intercourse with an infected person
- (b) Transfusion of infected blood

- (c) Sharing unsterilised skin piercing objects
- (d) From infected mother to un born baby through the placenta
- (e) From infected mother to newly born baby during birth.

A person who is infected with AIDS is HIV positive.

A person who is no infected with AIDS is HIV negative.

Name four People who are at a high risk of getting HIV/AIDS

- The youths (14 - 45 years) because they are sexually so active
- Prostitutes
- Bar maids
- Long distance travelers
- Medical workers who treat and look after HIV patients

Mention any two traditional practices that may lead to HIV transmission

- | | |
|--|--|
| <ul style="list-style-type: none"> - Tribal circumcision - Tribal Tattooing - Ear and nose piercing - Extraction of teeth - Giving out young girls to in-laws to look after them. | <ul style="list-style-type: none"> - Extraction of jiggers - Making a blood pact - Widow or widower inheritance |
|--|--|

Give any three Ways how HIV/AIDS is not spread .

- | | |
|--|---|
| <ul style="list-style-type: none"> - Normal body contact through shaking hands. - Touching the body of an infected person - Mosquito bites/ bed bugs - Caring for HIV patients | <ul style="list-style-type: none"> - Washing clothes of HIV patients - Sharing cutlery - Sharing a toilet or latrine - Hugging or embracing a patient - Sharing a comb |
|--|---|

Write down any three Signs and symptoms of HIV/AIDS.

- | | |
|--|---|
| <ul style="list-style-type: none"> - Prolonged dry cough - Persistent fever - Chronic diarrhea - Itchy skin rash - Excessive loss of body weight - Herpes zoster | <ul style="list-style-type: none"> - Oral thrush - Skin cancer - Mental confusion - Swollen glands - Excessive sweating at night |
|--|---|

Give any two effects of HIV/AIDS to an individual.

- | | |
|--|---|
| <ul style="list-style-type: none"> - Loss of immunity - Victim suffers a lot of pain - Loss of income | <ul style="list-style-type: none"> - Worries - Death because it has no cure |
|--|---|

What are the Effects of HIV/AIDS on the family?

- A lot of money is spent on treatment and special care
- Increased number of orphans
- Failure to get basic needs when the bread earner is the victim
- Worries among family members
- Loss of members of the family

Mention any two effects of HIV/AIDS to the community.

- Low production and reduced rate of development as people who are economically active die.

- Reduced population

State any two ways of Preventing and control of AIDS/HIV

- Educating people about the spread and prevention of AIDS
- Abstaining from premarital sex
- Avoiding extra – marital sex
- Screening blood for transfusion
- Use of condoms during sex
- Being faithful to your sexual partner
- Sterilizing sharp skin piercing objects before and after use
- Taking care when giving first aid or treating infected persons to avoid direct contact with other people's blood

How can you manage and care for HIV/AIDS patients.

- Regular counseling
- Comforting them
- Keeping them, their property and surrounding clean
- Providing them with foods rich in a balanced diet
- Providing them with recreation and entertainment
- Treat any infections immediately
- Provide regular medical attention
- Those on ARV's should take them regularly (ARV – Anti Retro Viral drugs)

Identify any two Organizations in Uganda that help people with HIV/AIDS

- TASO – The Aids support organization
- It provide counseling to AIDS patients
- It provides treatment to AIDS patients
- It provides material support to AIDS victims and orphans of AIDS in form of food, clothing and shelter
- It carries out HIV/AIDS testing
- It pays fees for orphans of AIDS and children with HIV.

GONORRHOEA:

It is sexually transmitted diseases caused by a bacterium Neisseria Gonorrhea of the Gonococci family.

- It leads to inflammation of the reproductive organs
- It easily leads to sterility as it results into blockage of the epididymis and oviducts

Give two Signs of gonorrhea in males

- Burning pain when urinating
- Passing out thick yellowish pus from the urethra
- Painful swelling of the testicles
- Rash and sores around the genitals

Write down any two Signs of gonorrhea in women

- Burning pain when passing out urine
- Discharge of pus from the vagina
- Pain in the lower abdomen
- Pain and severe bleeding during menstruation

What is the sign gonorrhea in babies?

- Red and swollen eyes
- Pus coming out of the baby's eyes

Identify any two Effects of Gonorrhea.

- It can lead to permanent damage of the reproductive organs if not treated early.
- It leads to sterility
- It blocks the urethra leading to difficulty in passing out urine.
- It leads to blindness in babies

How can gonorrhea be prevented?

- Have one lifelong sexual partner
- Use condoms during sexual intercourse
- Seek early treatment from a qualified health worker
- Abstain from sex before marriage

SYPHILIS

It is a sexually transmitted disease caused by bacteria called Treponema Pallidum

How can syphilis be prevented and control?

- Have one lifelong sexual partner
- Being faithful to your sexual partner
- Seek early treatment with your partner
- Uses condoms with untrusted partner
- Abstain from premarital sex

CHANCROID

It is caused by bacteria which are passed out from an infected person to the other through sexual intercourse.

Signs of chancroid

- A soft chancre appears on the genitals
- The chancre bursts into a painless sore
- Swelling of lymph nodes in the groin

Prevention

- Use the ABC technique

A – Abstain from sex outside marriage/before marriage

B – Be faithful to your partner

C – Condom use

Write down any three disorders of the reproductive system.

- Low sperm count
- Impotence
- Blocked oviducts
- Miscarriage
- Ectopic pregnancy
- Enlarged prostate
- Bladder stone

Explanation

Low sperm count

Some men don't have enough sperms to move through the vagina and fertilise the ovum

Impotence

Some men do not get an erection and this prevents them from having sexual intercourse

Blocked oviducts

The common cause of blocked oviducts in women is untreated gonorrhoea. Blocked oviducts prevent the sperms from meeting the ovum

Miscarriages

This comes as a result of damage in the uterus which prevents implantation and conception

Ectopic pregnancy

This is where the embryo develops and grows in the oviducts instead of the uterus.

Ectopic pregnancy is caused by a partly blocked oviduct.