PRIMARY SIX SCIENCE TOPICAL BREAKDOWN

TERM ONE 2023

THEMES

1. THE WORLD OF LIVING THINGS
2. MATTER AND ENERGY
3. HUMAN BODY
4. HUMAN HEALTH

TOPICS

1. CLASSIFICATION OF ANIMALS
2. SOUND ENERGY
3. CIRCULATORY SYSTEM
4. ALCOHOL, SMOKING AND DRUGS

1. CLASSIFICATION OF ANIMALS

- Classification of vertebrates and invertebrates
- Cold blooded vertebrates
- Warm blooded vertebrates
- Invertebrates (Non-vertebrates)
- Care for and protection of vertebrates and invertebrates
- Mode of reproduction in vertebrates and invertebrates

2. SOUND ENERGY

- Sources of sound
- Musical instruments
- Pitch, frequency, volume of sound
- How sound travels in different materials
- Echoes
- How sound is produced, stored and reproduced
- The human ear
- Diseases and disorders of the human ear
- Comparing the human ear with organs of hearing in other animals
- Ways of caring for human ear

3. CIRCULATORY SYSTEM

- Blood circulation
- Structure and function of the heart
- Structure of the left and right ventricle
- Function of the parts of the heart
- Blood vessels
- Functional and structural differences of blood vessels
- How blood flows in and out of the heart
- Components and function of blood
- Diseases and disorders of the circulatory system
- HIV/AID as blood diseases
- Effects of AIDS to individual, family, community
- PIASCY Messages
- People infected with AIDS and care for people with AIDS
- HIV negative and HIV positive
- Increasing the volume of blood in circulation
- Testing for pulse, sites and why not use the thumb
- Blood groups, donors, recipient
- Ways of keeping circulatory system healthy.

4. ALCOHOL, SMOKING AND DRUGS IN SOCIETY

- Alcohol and alcoholism
- Types pf alcohol
- Methods of making alcohol
- Uses of alcohol
- Factors that lead to alcoholism
- Effects of alcohol to an individual, family and community

<u>Smoking</u>

- Reasons for smoking
- Factors that lead to smoking
- Types of smoking
- Effects of smoking to an individual, family and community
- Drugs contained in tobacco and their harmful effects

Drugs

- Essential drugs
- Characteristics of essential drugs
- Uses of essential drugs
- Storage of essential drugs
- Drug abuse, misuse and dependency
- Factors that lead to drug abuse, misuse and dependency
- Effects of drug abuse to an individual, family and community
- Life skills to safeguarding against alcoholism, smoking and drug dependency
- Ways of avoiding alcoholism, smoking and drug dependency
- Harmless and harmful drugs

PRIMARY SIX SCIENCE LESSON NOTES

THEMES: THE WORLD OF LIVING THINGS

TOPIC: CLASSIFDICATION OF ANIMALS

THE ANIMAL KINGDOM

Classification is the grouping of things or organism according to their common characteristics and features

Reasons for classifying animals

- For easy identification
- To enable us to name them easily

Factors to consider when classifying animals

- Mode of feeding
- Mode of reproduction
- Mode of movement

ANIMAL KINGDOM

Animals are multicellular organisms

- Animals cannot make their own food because they do not have chlorophyll
- They feed on already made food
- Animal cells have a cell membrane

Groups of animals

- Vertebrates
- Invertebrates

VERTEBRATES

Vertebrates are animals with a backbone/spine/vertebral column

Characteristics of vertebrates

- They have endoskeleton
- They have water proof skins
- They have alimentary canal
- They have brain protected by the skull

Examples of vertebrates

- Man
- Frog
- Weaverbird
- Cow
- Cobra
- Tilapia

Groups of vertebrates

- Birds
- Mammals
- Fish
- Reptiles
- Amphibians

Note:

Among the five groups of vertebrates, the two groups are warm blooded while the three groups are cold blooded (poikilothermic).

(1) Warm blooded vertebrates (homoiothermic)

These are animals with constant body temperature

Groups of warm blooded vertebrates

- Mammals
- Birds

Examples of warm blooded vertebrates

- Man
- Cow
- Dove
- Dog
- Sunbird

(2) Cold blooded vertebrates (poikilothermic)

These are animals whose body temperature changes according to the temperature of the environment.

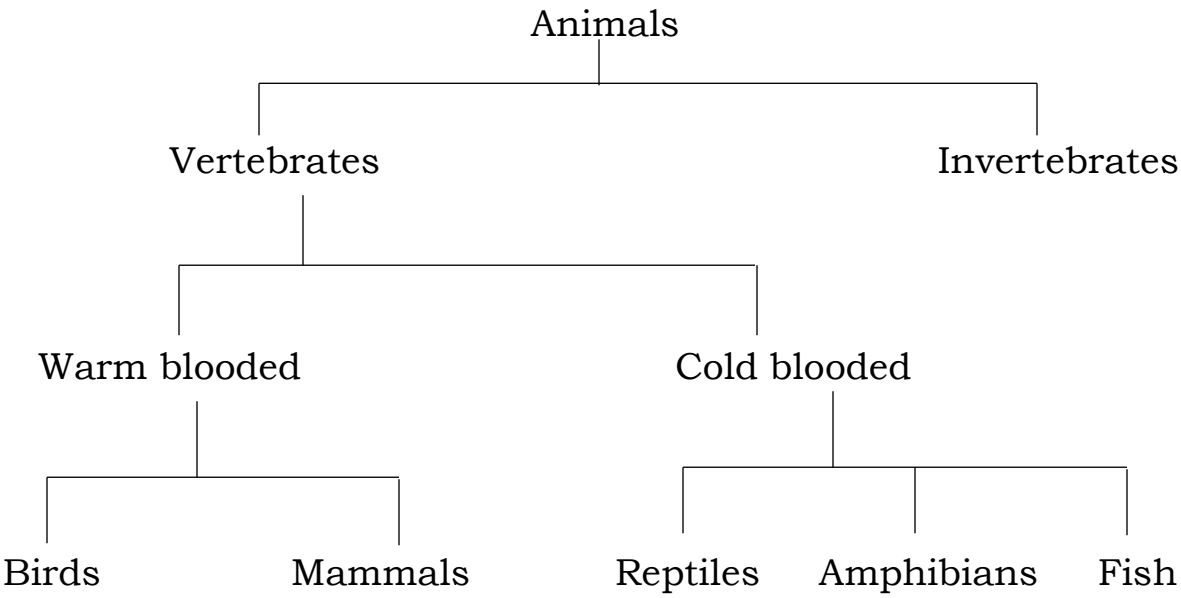
Groups of cold blooded vertebrates

- Reptiles
- Fish
- Amphibians

Examples of cold blooded vertebrates

- Gecko
- Crocodile
- Tilapia
- Nile perch
- Toad
- Newts

Flow chart showing classification of animals



Activity

1. Give any one reason for classifying animals
2. Why can't animals make their own food?
3. Why is a bat called warm blooded?
4. Identify two groups of vertebrates.
5. Why is a monkey grouped under vertebrates?
6. Give any two factors to consider when classifying animals
7. How is a skull useful to vertebrates?
8. Which type of skeleton do vertebrates/have?

A. MAMMALS

Mammals are animals with mammary glands

Characteristics of mammals

- They have mammary glands
- They have fur on their bodies apart from cetaceans (sea mammals)
- They are warm blooded
- They undergo internal fertilization
- Most mammals produce live young ones
- They use lungs for breathing
- They care for their young ones
- They have four chambered hearts.

Groups of mammals

- Primates
- Ungulates/hoofed mammals
- Carnivores/flesh eating mammals
- Rodents/gnawing mammals
- Sea mammals/cetaceans/marine mammals
- Flying mammals/chiroptera
- Pouched mammals/marsupials
- Egg laying mammals/monotremes
- Insectivores/insect eating mammals

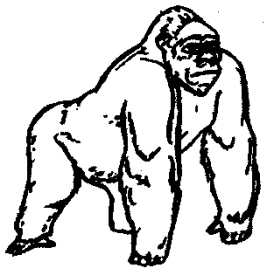
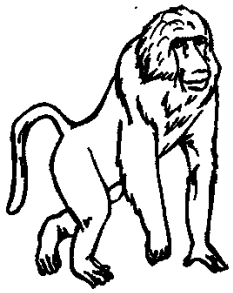
1. Primates

   These are mammals with well developed brain
   Primates are the most advanced group of mammals

   Characteristics
   - They have well developed brain
   - They have four types of teeth
   - They are omnivorous ie feed on both meat and vegetables (plant materials)
   - They have five fingers on each hand and five toes on each foot

Examples of primates

- Man
- monkey
- Gorilla
- Baboon
- Bush baby
- Chimpanzee
- Orangutan

Gorilla	Chimpanzee	Baboon	Bush baby
			

2. Ungulates/hoofed mammals
   - These are mammals with hooves and feed on vegetation
   - They are herbivorous
   - They have hooves

Groups of ungulates

- Even toad ungulates
- Odd toed ungulates

(i) Even toed ungulates

These are ungulates with an-even number of toes

Examples of even toed ungulates

- Sheep
- Goat
- Cattle
- Antelope
- Pigs

- Hippopotamus
- Warthog
- Deer
- Camel
- Buffalo
- Giraffe

Note:

Some even toed ungulates are ruminants while others are non-ruminants

Ruminants

These are animals which chew cud and have four chambered stomachs

Examples of ruminants

- Goats
- Sheep
- Cattle
- Camel
- Antelope

Non-ruminants

These are animals which do not chew cud

Examples of non-ruminants

- Warthog
- Hippopotamus
- Pig

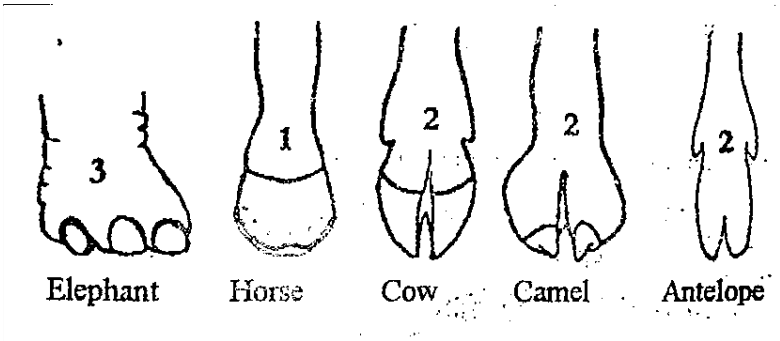
(ii) Odd toed ungulates

These are ungulates which have an odd number of toes

Examples of odd toed ungulates

- Horse
- Donkey
- Elephant
- Zebra
- Rhino

Illustrations of some hooves of ungulates



Activity

1. Give any two examples of primates.
2. Why is a goat called a ruminant?
3. How do most mammals reproduce?
4. Name the most advanced group of mammals.
5. Mention the group of vertebrates which feed their young ones on milk from mammary glands.
6. State any one characteristic common to all mammals.
7. State one of the difference between ruminants and non-ruminants.
8. Why is an antelope classified as a mammal?
9. Give one difference between omnivores and herbivores.

3. Carnivorous mammals/flesh eating mammals

These are mammals which feed mainly on flesh (meat)
They are also called preying mammals

Characteristics of carnivorous mammals

- They have well developed canine teeth for tearing flesh
- They have a good eye sight
- They have a good sense of smell
- They have soft pads under their feet
- They have a good speed

Examples of carnivores

- Leopard
- Lion
- Tiger
- Cheetah

- Fox
- Hyena
- Dog
- Cat
- Jackal
- Wolf
- Mangoose

How carnivorous mammals are adapted to their mode of feeling.

- They have well developed canine teeth for tearing flesh.
- They have soft pad under their feet to enable them run after their prey without making noise.
- They have good speed to run after their preys.
- They have a strong eye sight to spot their preys from a distance.

Note:

Some carnivores are predators while others are scavengers.

Predators

These are animals which hunt and kill their prey

Examples of predators

- Lion
- Leopard
- Tiger
- Cheetah
- Mangoose
- Dog
- Cat

Prey

- A prey is an animal that is hunted and killed for food.

Scavenger mammals

- These are mammals that feed on carrion

Examples of scavenger mammals

- Hyena
- Jackal

4. Gnawing mammals/Rodents

These are mammals with well developed incisors for cutting and grinding food

NB: Gnawing is the act of chewing rapidly with in cisor teeth.

Characteristics of rodents

- They are herbivorous
- They have strong claws for digging the ground
- They have well developed incisors
- They have no canines

Examples of rodents

- Rats
- Squirrels
- Porcupines
- Mice
- Guinea pigs

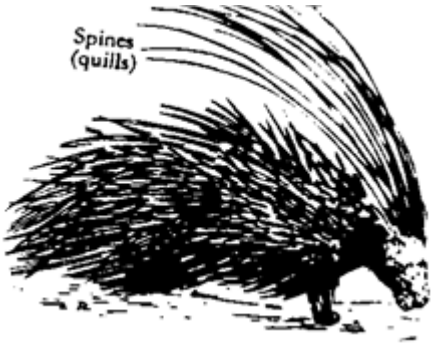
NOTE: Porcupines have spines for protection

Illustrations of rodents

Rat

Squirrel

Porcupine



5. Insect eating mammals/insectivores

These are mammals which feed on insects

Characteristics of insect eating mammals

- They have a good sense of smell
- They have strong claws for digging the ground to get insects
- They are nocturnal (Activity hunt during the night)
- They have long a sticky tongue to catch insects

Examples of insect eating mammals

- Hedgehog
- Aardvark/antbear
- Elephant shrew
- Pangolin

Note:

Hedgehog uses spines for protection

Illustrations of insectivores

Hedgehog	Aardvark (antbear)
	

6. Flying mammals/chiroptera
   - These are mammals that move by flying ie bats

Characteristics of flying mammals

- They are nocturnal
- Their forelimbs are attached to folded skin to act as wings
- They use echoes to find food and dodge obstacles

Types of bats

- Insect eating bats
- Fruit eating bats
- Blood sucking bats (vampire bats)

Importance of bats

- They control insect pests and vectors
- They help in seed dispersal

Dangers of bats

- Some bats spread disease to man e.g Marburg.
- Their waste cause bad smell
- Some bats destroy fruits

Qn: How are bats harmful to the environment?

- Fruit eating bats destroy fruit crops.

7. Pouched mammals/marsupials
   - These are mammals with a pocket (pouch) on their abdomen for carrying their young ones
   - They have a long tail for balancing when hopping

Examples of pouched mammals

- Kangaroo
- Wallabies
- Koala bear
- Wombat
- Opossum

An illustration of a kangaroo

Activity

1. How do animal below protect themselves?
   i. Porcupine
   ii. Hedgehog
2. Why are bats said to be dangerous to crop farmers?
3. How are bats useful to people?
4. How useful are echoes to a bat?
5. Why is a bat classified as a mammal yet it flies?
6. How are pouches important to Kangaroos?
7. State the importance of scavengers in our environment.
8. How are canine teeth useful to a lion?
9. Apart from having well developed canine teeth, how else are carnivorous mammals adapted to their mode of feeding?
10. Give one danger of rodents to crop farmers

8. Egg laying mammals (monotremes)
    - These are mammals that reproduce by laying eggs
    - They lay eggs
    - They have no teeth
    - They have beaks
    - They are the most primitive mammals because they lay eggs

Examples of monotremes

- Duck billed platypus
- Spiny ant eater (echidna)

Illustrations of monotremes

Duck billed platypus	Spiny ant eater

9. Sea mammals/cetaceans/marine mammals
   These are mammals that live in seas.

   Characteristics of sea mammals (cetaceans)
    - They have blubber to keep them warm
    - They use lungs for breathing
    - They live in seas
    - Their forelimbs are modified into flippers

Examples of sea mammals

- Whales
- Dolphins
- Porpoises
- Seals
- Dugongs

Illustrations of sea mammals

Whale	Porpoise
	

Importance of mammals

- Some mammals are sources of food
- Some mammals are used for protection
- Some mammals provide labour
- Some mammals are kept as pets (for fun)
- Some mammals attract tourists.

Dangers of mammals

- Some mammals are crop pests
- Some mammals are disease vectors
- Some mammals carry disease vectors
- Some mammals attack and kill people and domestic animals

Activity

1. Why are duck billed platypus called mammals.
2. How are sea mammals adapted to living in cold water?
3. Identify one reason why whales are grouped under mammals and not fish.
4. Mention any two examples of sea mammals.
5. Give any one way mammals are important in the environment.
6. Of what value is blubber to dolphins and whales?
7. How does blubber keep sea mammals warm?

B. BIRDS

These are warm blooded vertebrates with feathers, wings and a beak.

Characteristics of birds

- They have streamlined bodies
- Their bodies are covered with feathers
- They have scales on their legs
- They are warm blooded
- They have horny beaks with no teeth
- They reproduce by laying eggs
- They undergo internal fertilization
- They have four-chambered hearts
- They take care of their young ones
- Their forelimbs are modified as wings
- They respire by means of lungs

Groups of birds

- Swimming birds
- Climbing birds
- Birds of prey
- Perching birds
- Scratching birds
- Wading birds
- Scavenger birds
- Flightless birds

1. Birds of prey

   These are birds that hunt and kill their prey

   Characteristics of preying birds

   - They are carnivorous (feed on flesh)
   - They hunt and kill their prey
   - They have a strong eye sight
   - They have strong sharp hooked beaks
   - They have strong sharp curved talons

   Examples of preying birds

   - Eagles
   - Owls

- Hawks
- King fishers
- Falcons
- Kites
- Secretary birds

Illustrations of beak and foot of birds of prey

Adaptations of preying birds to their mode of feeding

- They have strong sharp hooked beak for tearing flesh
- They have a good eye sight to spot their prey from a distance
- They have strong sharp curved talons for killing and gripping their prey.

2. Climbing birds
   These are birds which spend most of their time on trees

Characteristics of climbing birds

They have two toes pointing forward and two toes pointing backward

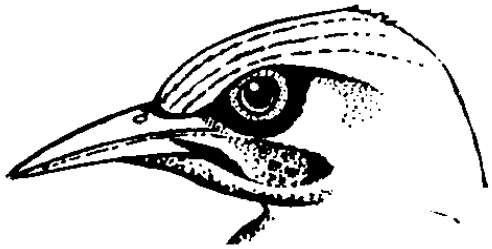
Examples of climbing birds

- Wood pecker
- Parrot

Wood pecker

- It feeds on insects
- It has a long pointed beak for getting insects from barks of trees

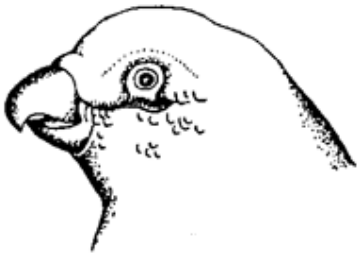
A beak of a wood pecker



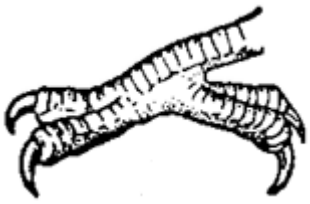
Parrot

- It feeds on seeds
- It has a short beak for cracking seeds and nuts

A beak of a parrot



A foot of a climbing bird



3. Flightless birds

These are birds which are unable to fly

Qtn. Why are flightless birds unable to fly?

- They have weak and small wings compared to their body size
- They have weak flight muscles
- They have a lot of bone marrow that makes them heavy.

Examples of flightless birds

- Ostrich
- Kiwi
- Penguin
- Emu
- Cassowary
- Rhea

Illustrations of some flightless birds

Kiwi **Ostrich** **Penguin**

Activity

1. Why are birds regarded as warm blooded vertebrates?
2. How are mammals similar to birds in terms of reproduction?
3. How are hooked beaks useful to preying birds?
4. Why do birds have streamlined bodies?
5. How do birds reproduce?
6. Mention any two characteristics of birds
7. How is a duck billed platypus similar to a duck in terms of reproduction?
8. Why are eagles grouped under birds of prey?
9. Why is an ostrich unable to fly?
10. How is a parrot different from a wood pecker in terms of feeding?

4. Wading birds

   These are birds which live along river banks and swamps.

   Characteristics of wading birds

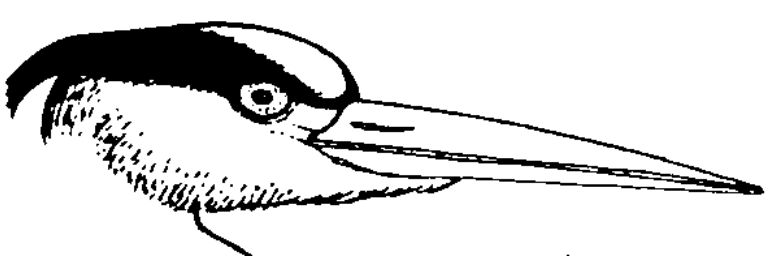
   - They have half webbed feet to walk in mud
   - They have long thin legs to enable them walk in shallow water.
   - They have long thin beak for catching fish and frogs in water

Examples of wading birds

- Flamingo
- Heron
- Crested crane
- Ibis
- Rail birds
- Egrets

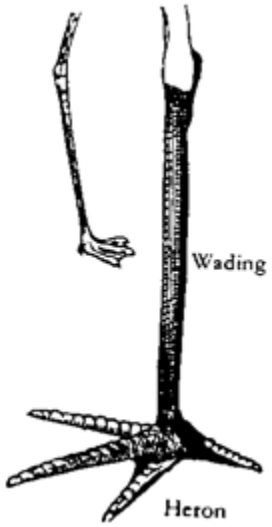
A beak of a wading bird.

It has a spear shaped beak for hunting fish and other water animals for food.



A foot of a wading bird

These legs are long, thin and half webbed for walking in shallow water bodies.



5. Scavenger birds
   - These are birds which feed on carrions
   - They have strong curved beaks for tearing flesh
   - They clean the environment by feeding on carrion

Examples of scavengers birds

- Crows
- Vultures
- Marabou storks
- California condors

6. Swimming birds
   These are birds with fully webbed feet for swimming

   Characteristics of swimming birds
   - They have fully webbed feet for paddling in water.
   - They have spoon shaped beaks for sieving and scooping food from mud.
   - Their skin has many oil glands that produce oil to make feathers water proof
   - They have flat broad breast bone for floating on water

   Examples of swimming birds

   - Ducks
   - Swans
   - Penguins
   - Geese
   - Pelicans
   - Seagull

   A beak of a swimming bird

   A foot of a swimming bird

Adaptations of some birds to swimming

- They have fully webbed feet for flapping water during swimming
- They have streamlined bodies to reduce viscosity in water.
- They have flat broad breast bone to enable them float on water.

7. Scratching birds
   These are birds which scratch the ground to get food.

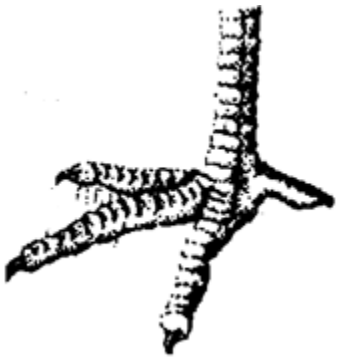
   Characteristics of scratching birds
   - They have strong and blunt claws for scratching the ground
   - They have strong pointed beak for picking seeds from the ground
   - They feed on worms, insects and seeds
   - They have thick toes

Examples of scratching birds

- Chicken
- Guinea fowl
- Turkey

A beak of a scratching bird

A foot of a scratching bird



8. Perching birds

These are birds which have three toes pointing forward and one toe pointing backward.
This helps them to grip or hold twigs and small branches

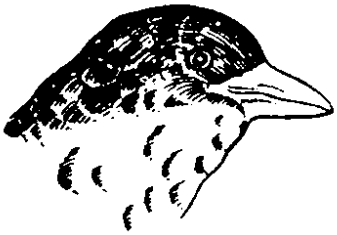
Groups of perching birds
- Seed eaters
- Insect eaters
- Nectar suckers
- Fruit eaters

(a) Seed eaters
They feed on seeds
They have conical beaks for breaking seeds

Examples of seed eaters

- Weaver birds
- Doves
- Pigeons
- Finches

A beak of seed eater



(b) Insect eaters
They feed on insects
They have short narrow beaks for picking insects

Examples of insect eaters
- Sparrow
- Robins
- Bee eater
- Swallow
- Swift

(c) Nectar suckers
They feed on nectar

They have long slender slightly curved beak for sucking nectar

Examples of nectar suckers

- Sunbird
- Hummingbird

A beak of a sunbird

(d) Fruit eaters

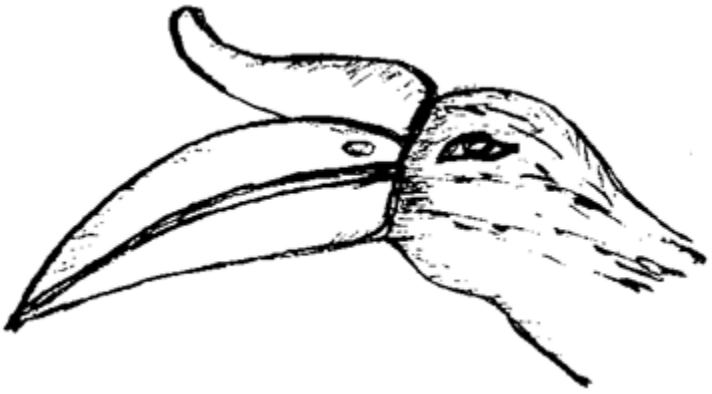
They feed on fruits

They have a long stout beak for collecting fruits

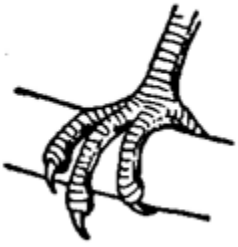
Example of a fruit eater

Hornbill

A beak of a hornbill



A foot of a perching bird



Ways in which birds are adapted to flying

- They are streamlined to reduce friction (viscosity) in air
- They have hollow bones which reduces their weight

- They have flight feathers.
- Their fore limbs are modified into wings
- Their eyes are protected from strong wind during flight by nictitating membrane
- They have no pinnae to obstruct the flow of air.
- They have hollow air sacs in their lungs.
- Their body is covered with feathers to prevent heat loss.

Importance of birds

- They are a source of food to people
- Some birds like sunbirds pollinate flowers.
- Some birds like vultures, crows and marabou storks clean our environment by feeding on carrion.
- Domestic birds are a source of income to farmers
- They attract tourists
- Birds control pests and vectors by feeding on them.

Dangers of birds

- Some birds spread diseases like flu.
- Many birds destroy farmers' crops
- Some birds make a lot of noise
- Some birds cause accidents on runways at airports
- Some kill small poultry birds
- Their droppings can pollute the environment.

Activity

1. Which group of birds have half webbed feet?
2. How are marabou storks important in the environment?
3. What enables ducks to swim easily in water?
4. State one way in which sunbirds are important to plants.
5. How are birds adapted to flight?
6. Give one danger of birds to the environment.
7. How is a sunbird adapted to its mode of feeding?
8. What do wading birds feed on?
9. In the space provided below, draw a foot of a swimming bird.

10. State one danger of birds of prey to poultry farmers

C. REPTILES

These are animals which move by crawling
Reptiles have four limbs apart from snakes which are limbless.

Characteristics of reptiles

- They are cold blooded
- Most reptiles reproduce by laying eggs
- They use lungs for breathing
- They undergo internal fertilization
- They do not take care of their youngones
- They have scales on their bodies
- They have three chambered hearts.

Groups of reptiles

- Snakes
- Crocodiles and alligators
- Lizards
- Tortoises and turtles (Terrapins)

(a) Snakes

These are limbless reptiles

Characteristics of snakes

- They are limbless
- They are carnivorous
- They move by slithering
- They have forked tongue for smelling and tasting
- They moult to allow further growth
- They have no eyelids

Types of snakes

- Poisonous snakes/venomous snakes
- Non-poisonous snakes/non-venomous snakes

(i) Poisonous snakes

- They have long teeth called fangs connected to poison glands
- They have triangular heads
- They have hollow fangs

Examples of poisonous snakes

- Cobra
- Vipers
- Black mambas and Green mambas
- adders
- Skaapsteker
- Boomslung

A head of a poisonous snake

Features on the head of a poisonous snake

(a) Fangs

- For injecting venom into the body of the victim
- Venon is used to paralyse the prey

(b) Forked tongue

- For smelling and tasting food

(3) Poison gland

- It produces venom

Poisonous duct

- It directs venom to the fangs

Qtn: How do snakes detect sound?

By the help of the tympanic membrane below the surface of the body

Qtn: Why are poisonous fangs hollow?

- For passing venom into the prey.

Qtn: State one importance of snake poison

- For making anti-venom (serum)

(ii) Non-poisonous snakes

These are snakes which do not have venom

Characteristics of non-poisonous snakes

- They do not have fangs
- They do not have venom
- They have solid teeth

Examples of non-poisonous snakes

- Grass snake
- Green snake
- House snake

Constrictors

These are non-poisonous snakes that kill their prey by squeezing and suffocating them to death before swallowing.

Examples of constrictors

- Pythons
- Boa
- Anaconda

First aid for snake bites

- Tie a piece of cloth slightly above the bitten part
- Apply a black stone on the bitten part

Question: Why is it necessary to tie a piece of cloth slightly above the bitten part of snake bite victim?

- To prevent venom from reaching the heart

Question: Why is it necessary to kill and carry a snake to the health worker after it has bitten a person?

- To identify the right anti-venom to give to the victim.

Ways of controlling snake bites

- By growing tobacco around the compound
- By slashing tall grass in the compound
- By covering holes in the house and compound

Importance of snakes

- They control pests and vectors
- They provide venom for making serum
- Some snakes provide skins to make drum membranes, belts

Dangers of snakes

- They bite people
- They kill and swallow domestic animals

(b) Lizards

- They have four limbs
- They have movable eyelids
- They have sticky fleshy tongue

Examples of lizards

- Chameleons
- Geckoes
- Monitor lizards
- Common lizards
- Monster lizard (has fangs)
- Collared lizard
- The six lined race runner
- Kamodo dragon (the largest lizard)
  (Komodo drogon (the largest lizard)
- Rainbow lizards

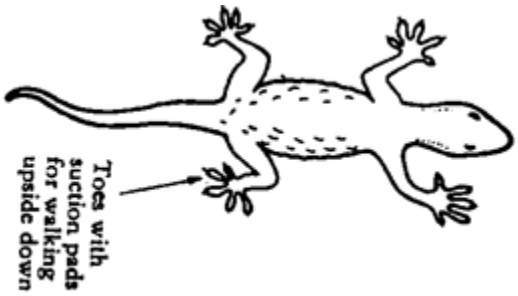
(i) Geckoes

- They are small and yellowish brown
- They live in houses

- They feed on small insects
- They lay eggs in cracks and holes in buildings
- They have suction pads on their feet

Note: Suction pads enable geckoes to move upside down on ceilings

A diagram showing a gecko



(ii) Chameleons

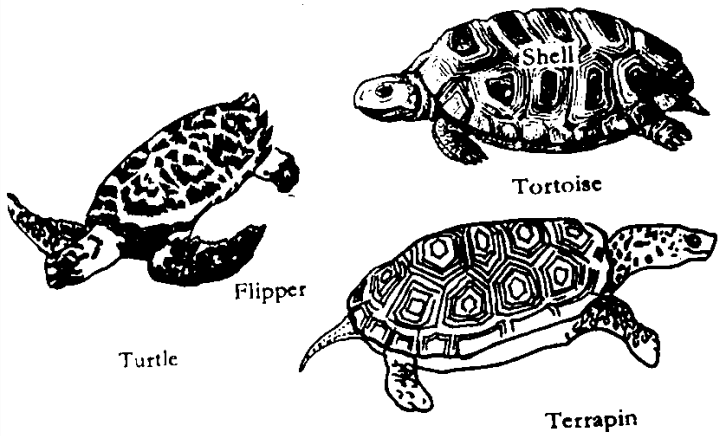
- They have long sticky tongues
- They camouflage for protection, trapping their preys(food). attracting mates and regulating body temperature
- They move their eyes separately
- They feed on insects
- They have well developed feet and tails for gripping twigs

An illustration of a chameleon

Tortoises/turtles and terrapins

- They have hard shells for protection
- Tortoises live on land while turtles and terrapins live in water
- Tortoises have half webbed feet while turtles and terrapins have fully webbed feet
- Tortoises lay eggs in sand
- Sand provides protection and warmth to eggs to hatch
- Turtles and terrapins have their forelimbs modified into flippers for swimming
- Tortoises/turtles and terrapins have endo and exo skeleton

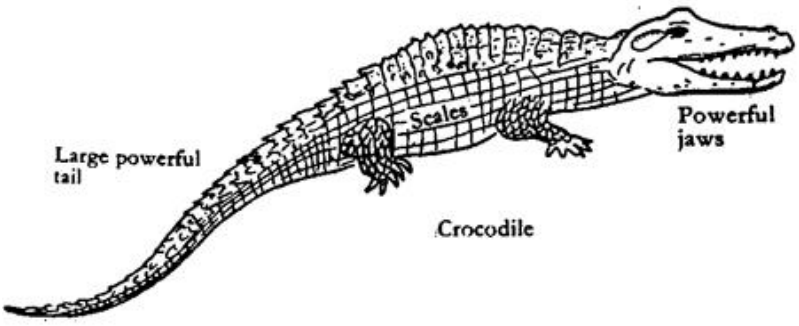
Illustration of a turtle/tortoise and terrapin



(c) Crocodiles and alligators

- They are the largest reptiles
- They have strong tails for swimming and attacking their prey
- Their bodies are covered with scales
- They lay eggs in sand
- They have many teeth for protection
- They have long strong jaws
- They are carnivorous i.e mainly feed on flesh (meat)

A crocodile



Importance of reptiles

- Some reptiles are sources of food to man
- Some reptiles control insect vectors and pests
- Some reptiles provide skins for making leather items
- Snakes provide venom for making anti-venom
- Reptiles attract tourists

Activity

1. Give one example of a shelled vertebrate
2. Give one difference between birds and reptiles
3. Why are geckoes able to move upside down on ceilings?
4. Give two reason why chameleons change colours
5. How are geckoes important to people?
6. How is a chameleon able to capture its prey?
7. Give one similarity between reptiles and mammals
8. How does snake poison kill a person?
9. Give one reason why tortoises lay their eggs in sand.
10. In which way do lizards help to control diseases?
11. What do reptiles use for breathing?
12. Why do snakes moult?
13. Give one way of preventing snake bites at home
14. How is tail useful to a crocodile?
15. How do the following animals protect themselves?
    i. Crocodile
    ii. Snake
    iii. Tortoise
    iv. Chameleon

D. AMPHIBIANS

These are animals which can live both on land and in water (Double life animals)

Characteristics of amphibians

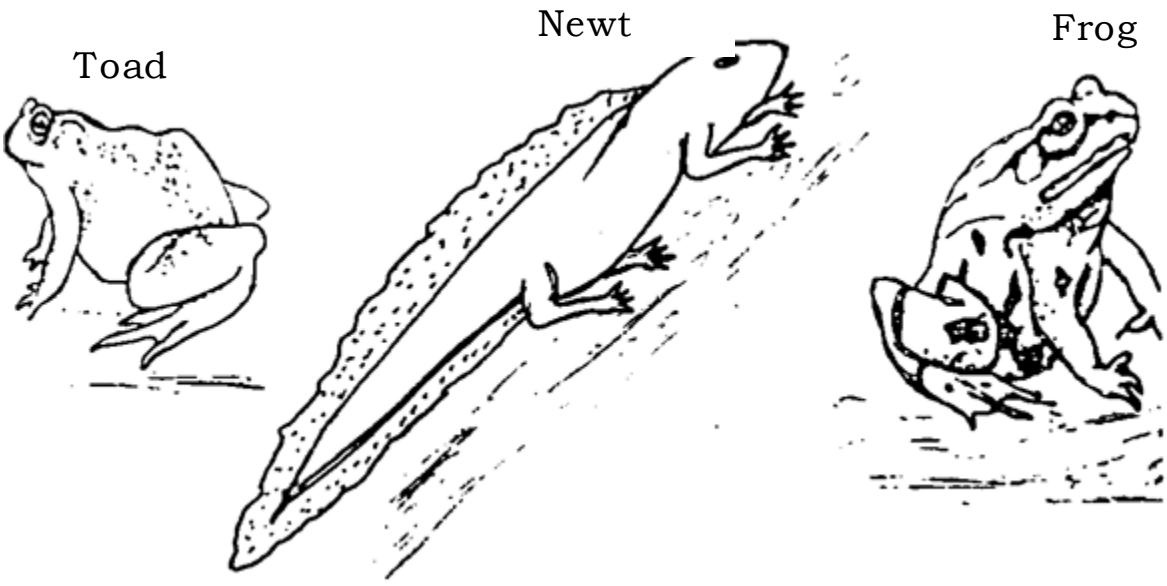
- They are cold blooded
- They undergo external fertilization
- They reproduce by laying eggs
- They live both in water and on land
- They move by leaping
- They lay soft shelled eggs

Examples of amphibians

- Frogs
- Toads
- Salamander
- Newts

Differences between toads and frogs

Toads	**Frogs**
Have black tadpoles	Have brown tadpoles
Live mainly on land	Live mainly in water
Breathe through lungs	Breathe through moist skin and lungs
Lay eggs in ribbon spawn 	Lay eggs in mass spawn 
Have rough skins	Have smooth moist skins
Have poison glands	Have no poison gland
Their hind feet are partly webbed	Their hind feet are fully webbed
Have shorter hind legs	Have longer hind legs



Importance of jelly on the eggs of amphibians

- It protects the eggs from predators
- It prevents eggs from drying up
- It holds eggs together

Feeding in amphibians

- They feed on small insects and worms
- They have a long sticky tongue for trapping flying insects.

Ways in which a frog is adapted to living in water

- They have streamlined body that enables them move in water
- They have fully webbed hind feet for swimming
- They have moist skin for breathing while in water

Importance of amphibians

- They control insect vectors and pests
- They are used as specimens in science laboratories

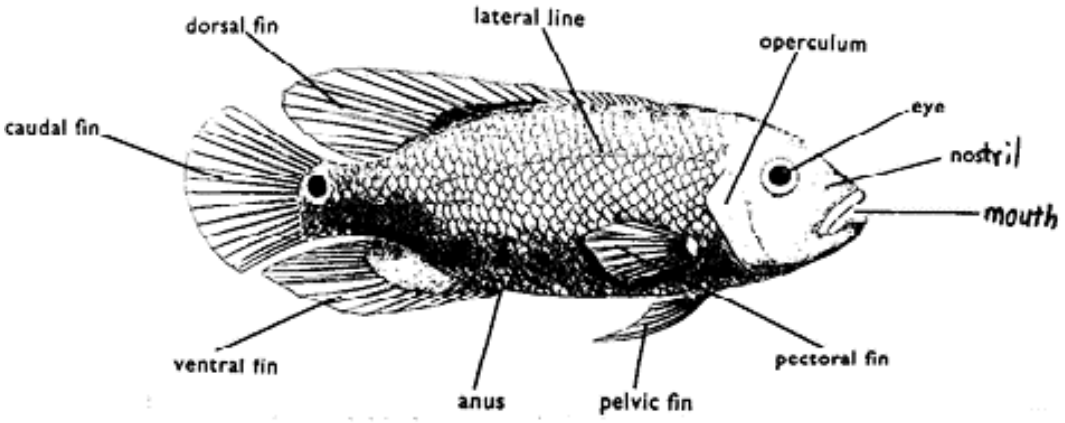
E. FISH

These are cold blooded vertebrates that live in water and use fins for swimming

Characteristics of fish

- They are cold blooded
- They are aquatic animals
- They reproduce by laying eggs
- They undergo external fertilization
- They have fins for swimming
- They have scales on their bodies
- They have streamlined bodies
- They use gills for breathing

Structure of a fish



Functions of each part

Mouth

- For taking in food and water

Nostril

- For smelling and tasting food

Gill cover/operculum

- For protecting gills from physical injuries

Gills

- For breathing

Scales

- They protect the skin of the fish

Lateral line

- For detecting sound waves in water

Fins

- For swimming
- For protection

Kinds of fins

- Median fins
- Paired fins

(i) Median fins

- They include; dorsal fin, tail fin, anal fin

Importance of median fins

They control the rolling and unsteady turning in water

Caudal fin(tail fin)

- It helps a fish to swim forward
- For changing the direction

Dorsal fin

- For protection

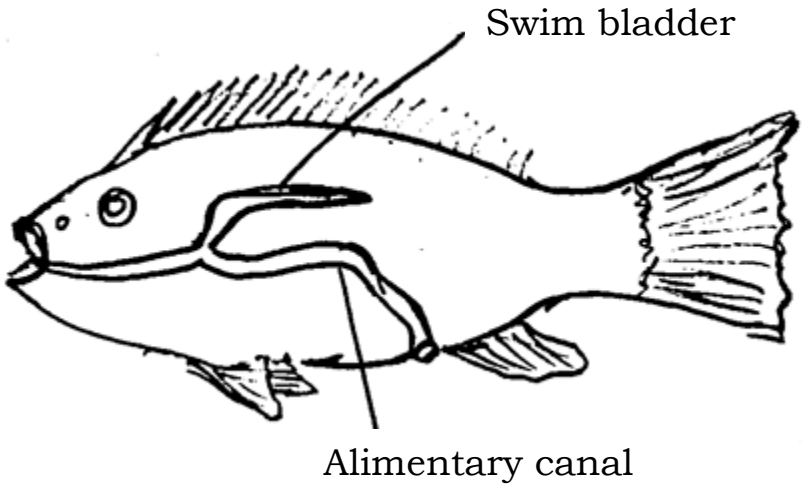
(ii) Paired fins

- They include; pelvic fin, pectoral fin
- They help a fish to swim upwards and downwards
- They act as breaks ie reduce speed or enable a fish to stop swimming

Types of fish

1. Bony fish eg Nile perch, tilapia, salmon, pike, trout, herrings
   - Bony fish have a swim bladder
   - A swim bladder controls the depth of which a fish swims
   - A swim bladder also keeps fish buoyant in water

A diagram showing a swim bladder



2. Lung fish
   - They live in muddy water
   - They hibernate in dry season
   - They have long thin pelvic and pectoral fin

Examples of lung fish

- Dipon, common lung fish (Emmamba)
- Neoceratodus
- Eel fish
- They have gill slits

3. Cartilaginous fish
   - They do not have a swim bladder
   - Their skeleton is made up of cartilage
   - They have eyelids
   - Their gills are covered with gill slits

   Examples of cartilaginous fish

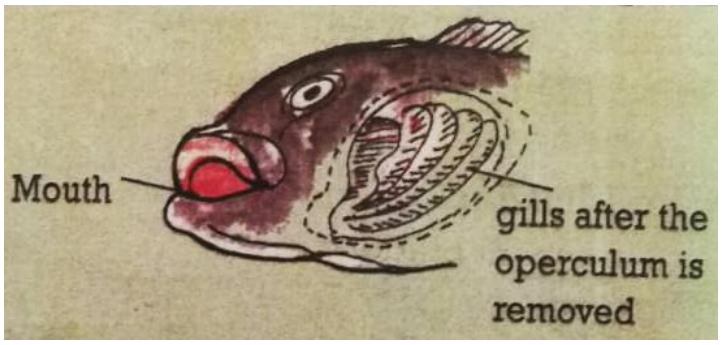
   - Dog fish
   - Skates
   - Rays

   Breathing in fish

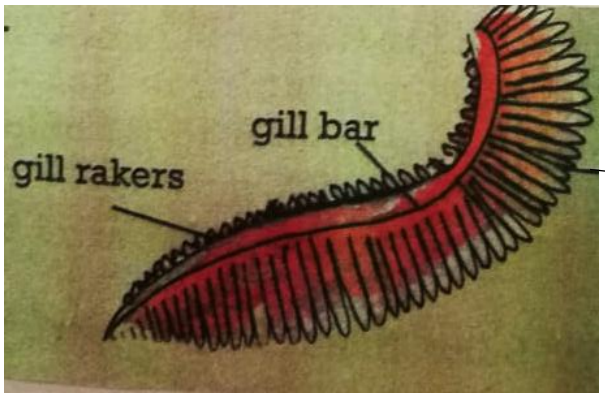
   - Fish breathe in dissolved oxygen
   - Fish take in oxygen by diffusion

- Water containing oxygen moves through the mouth and over the gills which absorb oxygen in water

Diagrams showing breathing mechanisms in fish



Parts of the gill



Functions of the parts

Gill bar

It holds the gill filaments

Gill rakers

They trap solid particles (materials) that may damage the gill filaments.

Gill filaments

- For gaseous exchange
- They absorb oxygen dissolved in water

Adaptations of gill filaments to their function.

- They are many in number to increase the surface area for gaseous exchange
- They are thin walled for easy diffusion of gases
- They are supplied with blood through blood capillaries
- They are always moist

Adaptations of fish to living in water

- They have streamlined bodies to reduce friction
- They have fins for swimming
- They have lateral line for detecting sound waves in water
- They have nostrils for smelling food in water
- Their skin is protected from physical damage by the scales
- They have slippery bodies to escape from their enemies

Defence mechanism in fish

- Some fish use spines on the dorsal fins
- Fish use lateral lines to detect sound from enemies
- Some have electric organs for shocking enemies
- Some have slippery bodies to enable them escape from the enemies

Importance of fish

- They are a source of food
- Their bones are used for making poultry feeds
- They are a source of income when sold
- They control some diseases by feeding on insect vectors

Activity

1. How is a swim bladder important to fish?
2. Why does fish die shortly when removed from water?
3. Why is a fish streamlined?
4. What do you call a young one of a fish?
5. How does a fish help in controlling malaria?
6. How can fish be conserved in water bodies?
7. How is a fish similar to a tadpole in terms of breathing?

8. Give any two ways fish protects itself from enemies
9. How does a fish benefit from its slippery body?
10. Suggest any one way a fish is adapted to living in water.
11. How are amphibians similar to the fish?
12. Why is a frog able to live both on land and in water?
13. How are the eggs of amphibians protected from being eaten by predators?
14. Give two similarities between fish and reptiles
15. Why are fish called cold blooded vertebrates?

INVETERBRATES

These are animals without a backbone

Groups of invertebrates

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

Note;

They can easily be remembered by "acronym" "SWAMEC"

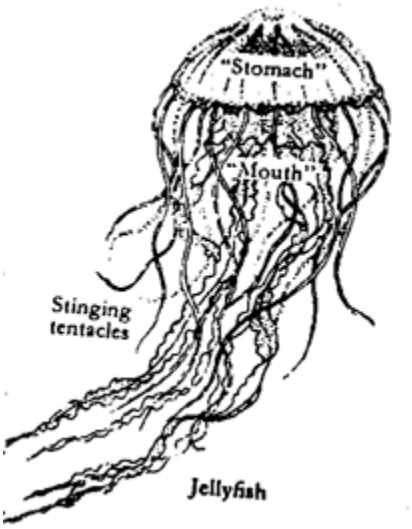
S - Coelentrates
W - Echinoderms
A - Molluscs
M - Arthropods
E - Worms
C - Sponges

A. Coelenterates
- They live in water
- They have soft bodies
- They have tentacles
- They are stinging animals
- They have one opening which acts as anus and mouth

Examples of coelenterates

- Jelly fish
- Hydra
- Sea anemone
- Coral

Jelly Fish



Sea anemone

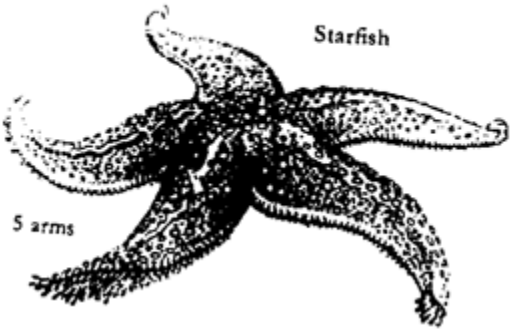
B. Echinoderms

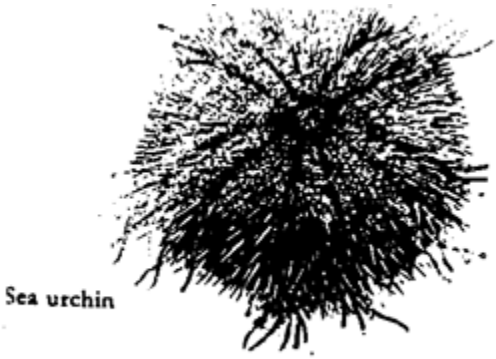
- They live in seas
- They have unsegmented bodies
- They have spines on their bodies

Examples of echinoderms

- Star fish
- Sea lilies
- Sea cucumber
- Sea urchin

Star fish **Sea urchin**





C. Sponges (Porifera)

- They live in water
- They are found in colonies
- They remain attached to the floor of the sea
- They breathe and feed through holes on their bodies

D. Molluscs

- They have soft and unsegmented bodies
- They live in sea, fresh water and on land
- Some have shells for protection
- They have tentacles
- They have hydrostatic skeleton
- Some have gills for breathing while land molluscs use simple lungs

Examples of molluscs

- Cuttle fish
- Octopus
- Snails
- Slugs
- Squids
- Oyster

Snails

- They are commonest molluscs

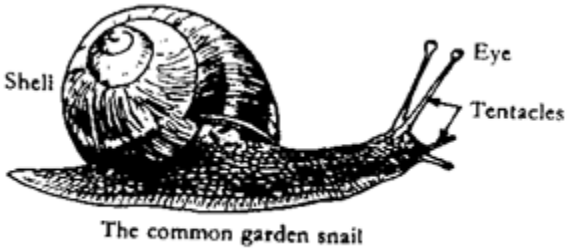
- Fresh water snails spread schistosomes (bilharzia flukes) which cause bilharziasis or schistosomiasis)
- Snails protect themselves by withdrawing their soft bodies in hard shells

Qn: How do snails and oysters protect themselves from danger?

- By hiding in their hard shell

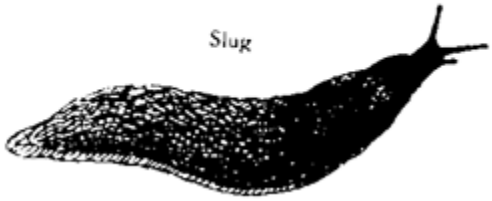
Illustrations of molluscs

Snail

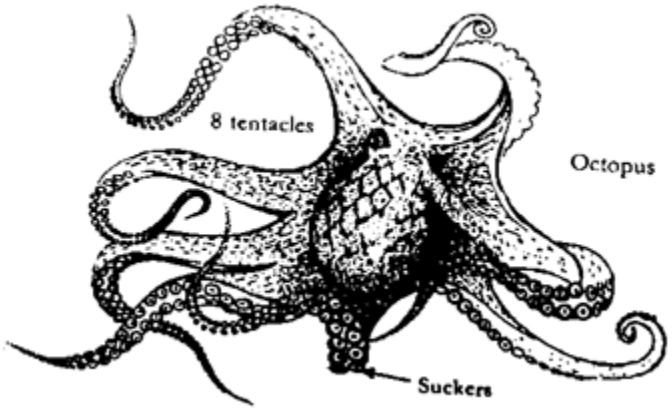


The common garden snail

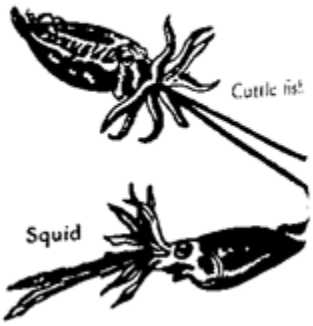
Slug



Octopus



Cuttle fish



Tentacles

- For detecting temperature, smell, touch and sound

Importance of molluscs to people

Some molluscs are sources of food to man

- Their shells are used to make animal feeds
- Their shells are used for decoration

E. Worms

- These are thin soft bodied animals
- They breathe through their moist skins
- They lay eggs

Group of worms

- Segmented worms (Annelids)
- Flat worms
- Round worms (Nematodes)

(a) Segmented worms

These are worms whose bodies are divided into segments
Some live in soil while others in water

Examples of segmented worms

- Earthworms
- Leeches
- Bristle worms

Qn: How are earthworms important to the soil?

- They aerate the soil
- They quicken decomposition of organic matter

Qn: How are earthworms able to aerate soil?

- By creating small holes (tunnels) in the soil

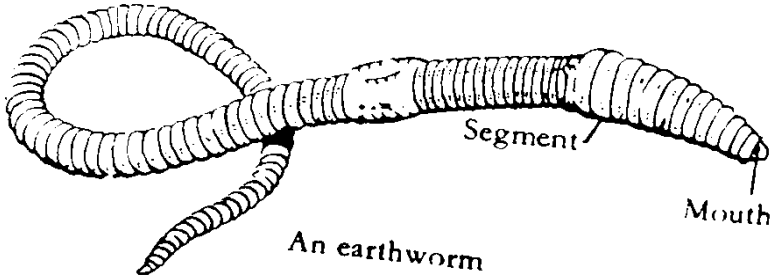
Qn: Why do earthworms come out of the soil when it has rained?

- To get oxygen

Qn: Why does an earthworm die when oil is poured its skin?

- Oil blocks the breathing organ or moist skin

Structure of an earthworm



Flat worms

- These have thin and flat bodies
- They are parasites that live in small intestines of human bodies and other animals
- They feed on the digested food

Examples of flat worms

- Tapeworms
- Liver flukes

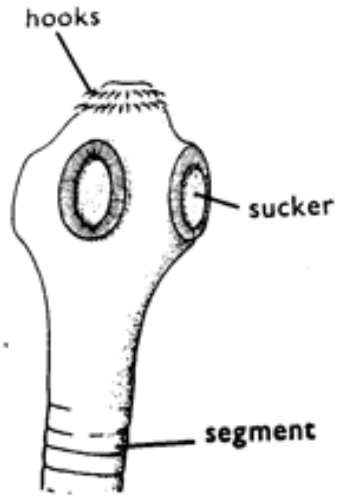
Parts of the tapeworm

Suckers: Provide attachment to the walls of the intestines

Hooks: provide attachment to the walls of the intestines

Segments: they contain eggs

Scolex: is the name given to the head of a tapeworm



Tape worms enter bodies through eating under cooked meat

Effects of tapeworm in the body of the host

- Tape worm causes malnutrition by feeding on digested food making the body lack some food values

Round worms

- These are worms with cylindrical bodies
- Some are parasites in man, plants and animals
- Some live in soil and water

Examples of round worms

- Hookworms
- Common roundworms
- Eelworms
- Pinworms
- Ascaris

Hookworms

- They enter body by penetrating the skin or boring the skin
- They feed on blood
- Hookworms in the body lead to hookworm anaemia

Ways of preventing hookworms in the body

- Wearing shoes in wet dirty places.
- Drinking boiled water
- Proper disposal of human faeces
- Regular deworming

Ways of controlling worm infestation

- Eating well cooked meat/fish/pork
- Regular deworming
- Washing fruits and vegetables
- Wearing shoes when walking in wet dirty places
- Drinking boiled water
- Proper disposal of human faeces

F. ARTHROPODS

These are invertebrates with jointed legs and segmented bodies

Characteristics of arthropods

- They have joined legs
- They have segmented bodies
- They have exoskeleton

Groups of arthropods

- Myriapods
- Crustaceans
- Arachnids
- Insects

Myriapods

- They have atleast a pair of legs on each segment
- Their bodies are divided into many segments

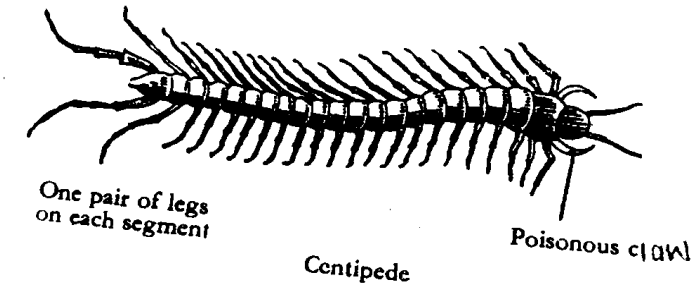
Examples of myriapods

- Millipedes
- Centipedes

Centipedes

- They have one pair of legs on each segment
- Their front legs are modified to form poison claws which they used to sting and paralyse their prey
- They are carnivorous
- They protect themselves by stinging
- They hide in wet places

Diagram of centipede

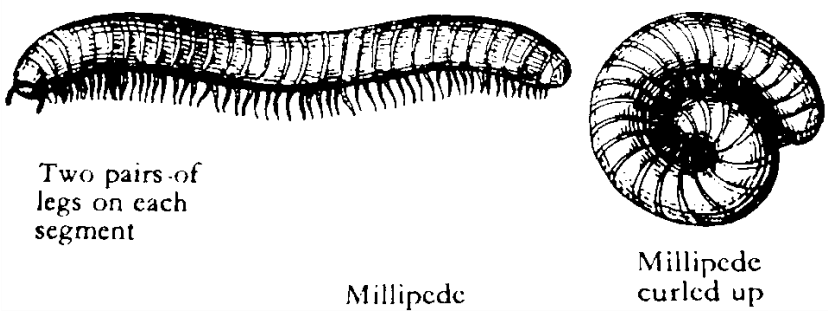


Centipede

Millipedes

- They have two pairs of legs on each segment
- They protect themselves by curling/coiling
- They are herbivorous animals
- They move slowly
- They aerate the soil by creating small holes in it

Diagram of a millipede



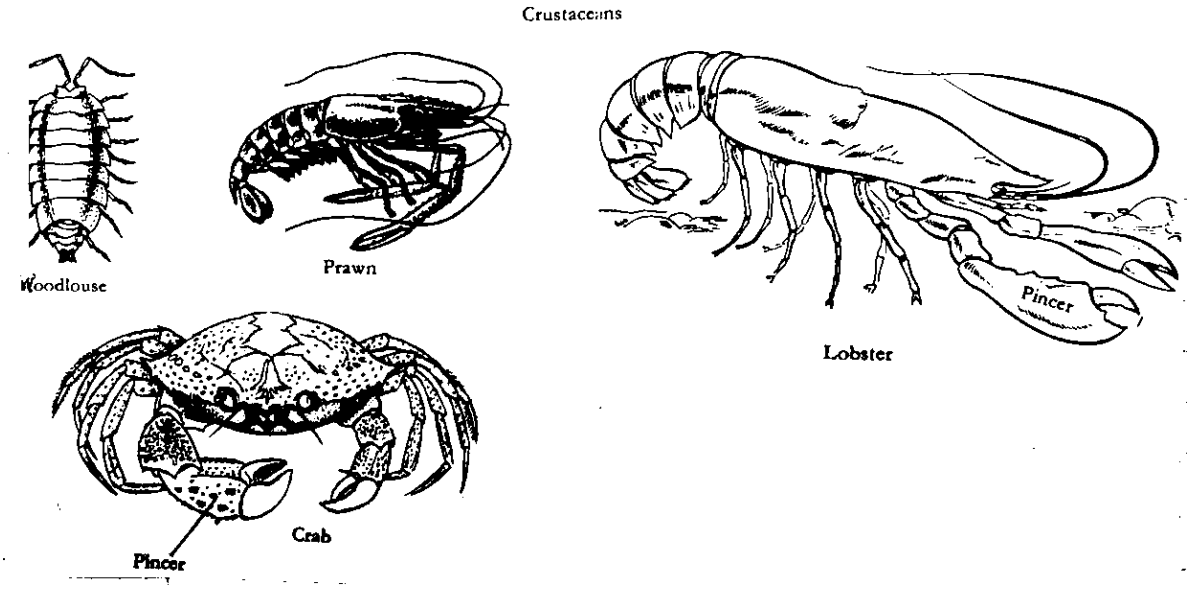
Crustaceans

- They have crusty skin
- Some live in fresh water while others in salty water
- They breathe through the gills
- Some are eaten
- They feed on insects, worms and vegetation

Examples of crustaceans

- Crab
- Cray fish
- Lobster
- Prawns
- Pond shrimp
- cyclop
- woodlouse
- sand hoppers

Diagrams showing crustaceans



Activity

1. Name one shelled mollusc
2. How are tentacles important on molluscs
3. To which group of arthropods do millipedes belong
4. State the danger of water snails to people
5. Mention one difference between millipedes and centipedes
6. How does a snail protect itself?
7. To which group of invertebrates does a lobster belong?
8. How do tape worms feed?
9. Identify one use of crustaceans in our daily life
10. How does boiling of water prevent worm infestation?
11. State the danger of having a lot of hook worms in the body
12. State one way of preventing tapeworm infestation
13. How are suckers similar to hooks in terms of function?
14. How is the feeding of tapeworms different from that of hookworms

ARACHNIDS

These are invertebrates with two main body parts and four pairs of jointed legs

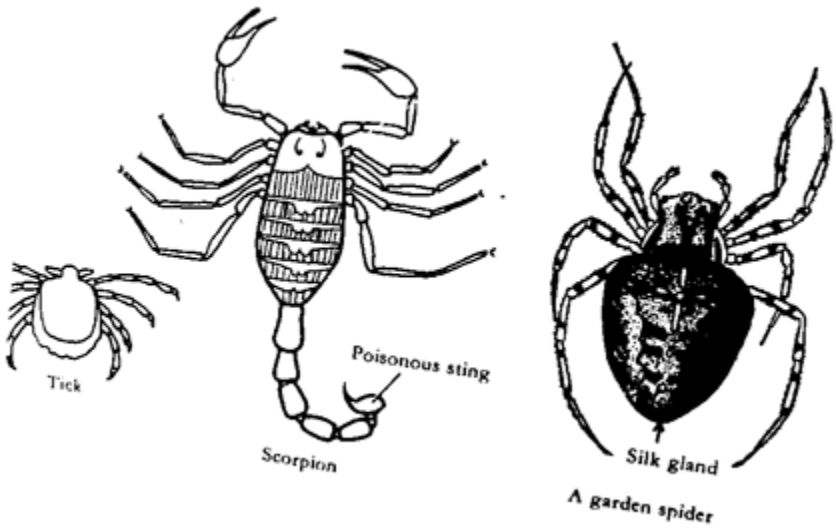
Characteristics of arachnids

- They are wingless
- They have two main body parts
- They have four pairs of jointed legs
- They have exo skeleton
- They have many simple eyes
- Spiders and scorpions use book lungs for breathing
- Mites and ticks use trachea for breathing

Examples of arachnids

- Ticks
- Scorpions
- Mites
- Spider

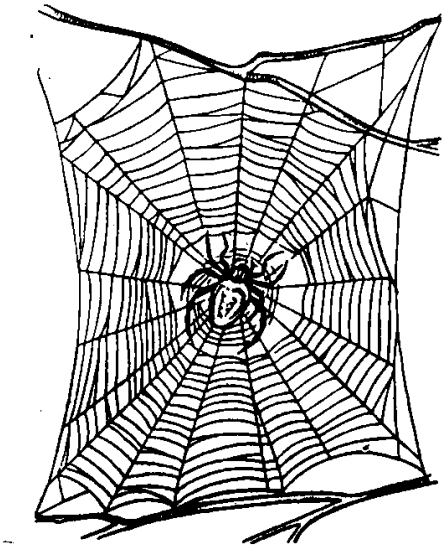
Diagrams of arachnids



Spiders

- Spiders reproduce by laying eggs
- Spiders have special organs at end of the abdomen called spinnerets used to spin silk to make cobwebs
- Cobwebs are used to trap prey and protection
- A home for a spider is called spider den

Diagram showing a spider web



Spider and its delicate web.

Scorpions

- These are invertebrates which produce their young one live
- They protect themselves by stinging
- They hide under stones, logs and in holes

Ticks and mites

- They feed on blood
- They are vector arachnids
- Ticks spread diseases like Heartwater, East coast fever, Red water, Anaplasmosis (Gall sickness) to domestic animals
- Ticks spread typhus fever to people
- Mites spread scabies to people (itch mite)

Importance of arachnids

- They eat insect vectors

Dangers of arachnids

- They spread diseases to people and animals

INSECTS

These are arthropods three main body parts and three pairs of jointed legs

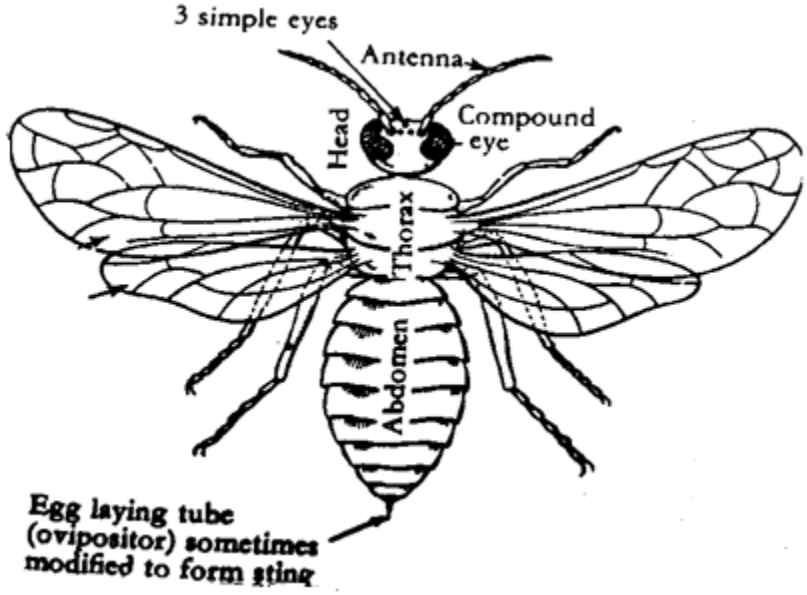
Characteristics of insects

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

Examples of insects

- Housefly - mosquitoes - grasshoppers
- Moth - crickets - locusts
- Blackfly - dragon fly - bees

Parts of an insect



Functions of each part of an insect

- Antannae /feelers – for detecting sound/temperature
- For feeling
- Wings: for flying/flight
- Proboscis : for sucking food
- Mandibles: for chewing food
- Spiracles: for breathing
- Ovipositor: for laying eggs
- Halteres: for balancing an insect during flight

Examples of insects with proboscis

- Mosquitoes
- Tsetse flies

- House flies
- Bees
- Black flies
- Butterflies

Examples of insects with mandibles

- Grasshoppers
- Locusts
- Cockroaches
- Termites
- Crickets

LIFE CYCLE (METAMORPHOSIS) IN INSECTS

Explain the term “Life cycle in insects”

This refer to stages of development an insect under goes.

TYPES OF METAMORPHOSIS

- Complete metamorphosis
- Incomplete metamorphosis

Complete metamorphosis

These are four stages of development an insect undergoes

Egg – Larva – Pupa – Adult

Examples of insects that undergo complete life cycle

- House flies
- Tsetse flies
- Butter flies
- Mosquito
- Black flies
- Bees
- Moth

Life cycle of a housefly

House flies lay eggs on decaying matter

Question: Why do houseflies lay eggs on decaying matter?

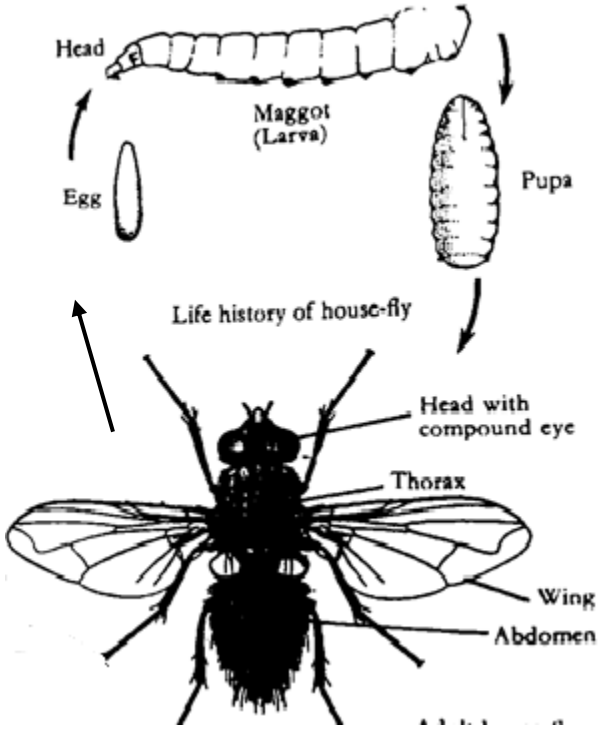
- To enable their larvae to get food

- To provide warmth to their eggs to hatch

Importance of maggots

- Maggots help to reduce the volume of faeces in pit latrines

Diagram showing the life cycle of a housefly



Dangers of houseflies to people

- They spread diseases to people

Activity

1. Mention one common characteristic among arachnids
2. In which way are arachnids different from insects?
3. How is a spider different from a housefly in terms of breathing
4. How are houseflies able to spread germs?
5. Mention any three diseases spread by house flies
6. State the economic importance of a housefly
7. How is a scorpion different from a spider in terms of reproduction?
8. What name is given to the following stages of a house fly?
   (a) Larva (b) Adult
9. How is a housefly adapted to spreading germs?
10. Identify the germ that causes trachoma

Mosquitoes

- Mosquitoes breed from stagnant/still water

Types of mosquitoes

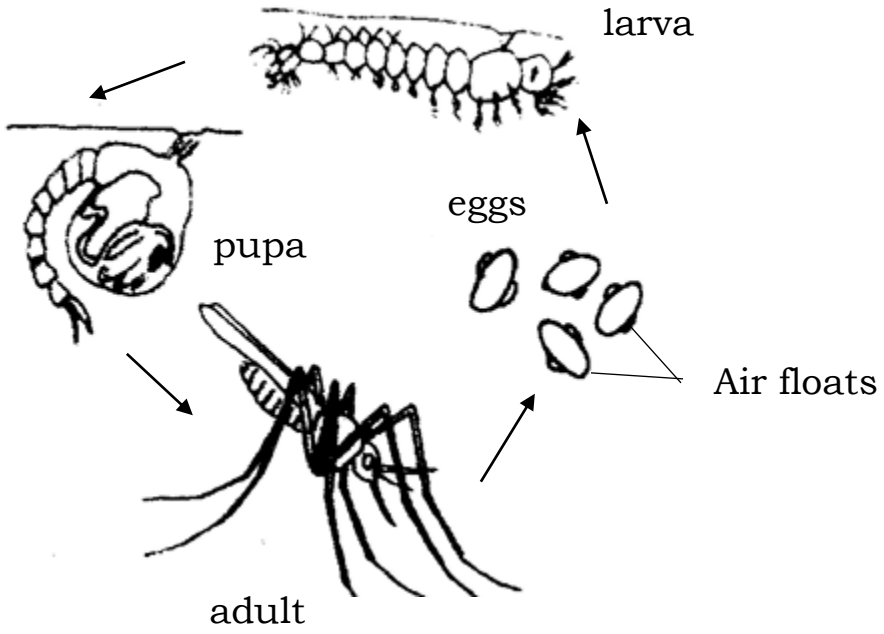
- Anopheles mosquitoes
- Culex mosquitoes
- Tiger/aedes mosquitoes

Diseases spread by each type of mosquito

- Female anopheles mosquito – malaria caused by plasmodium
- Culex mosquito – elephantiasis (Filariasis) caused by Filarial worms
- Tiger/Aedes mosquito – yellow fever and dengue fever caused by virus

Life cycle of mosquitoes

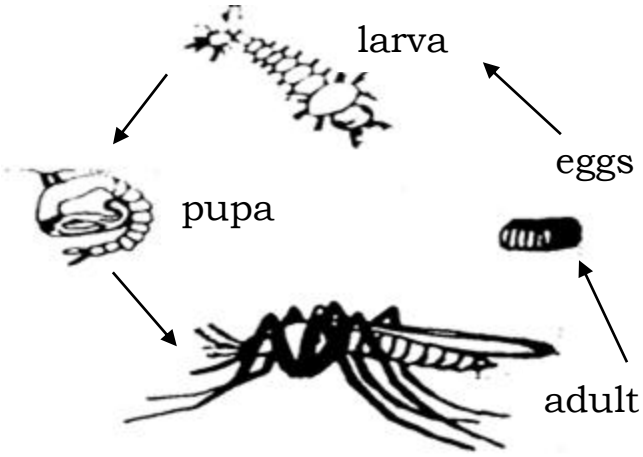
Life cycle of anopheles mosquito



NOTE:

- Air floats enable eggs to float on water

Life cycle of culex and aedes mosquito

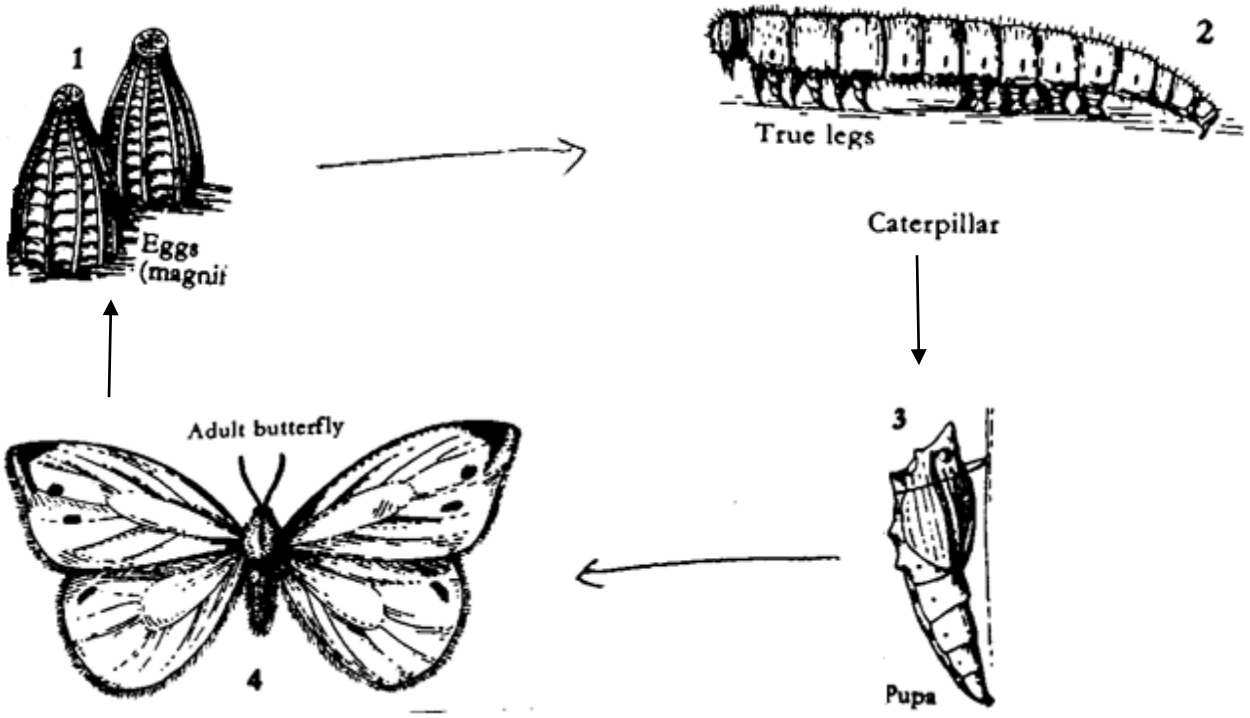


Ways of controlling diseases spread by mosquitoes

- Clearing bushes around homes
- Draining stagnant water
- Sleeping under treated mosquito nets
- Spraying mosquitoes with insecticides
- Rearing fish and frogs in ponds

LIFE CYCLE OF BUTTERFLY AND MOTH

- They lay eggs on plant leaves for their larva to get food



Activity

1. How does a caterpillar protect itself?
2. How is the life cycle of a tsetse fly different from that of a housefly?
3. Which stage of a butterfly is destructive to farmers?
4. How is a tsetsefly a danger to livestock?
5. Give one importance of butterfly to crop farmers
6. How are moths able to pollinate flowers at night?
7. Give two chemical ways of controlling mosquitoes at home
8. Mention one biological way of controlling mosquito infestation at home
9. How does oiling of stagnant water help to control mosquitoes in the environment?
10. Why is it important to drain stagnant water around homes.
11. Why do butterflies lay eggs under leaves?
12. How do we call the larva stage of the following insects?
    (a) Housefly (b) Mosquito
    (c) Bee (d) Butterfly
13. Why is it dangerous to pour paraffin in pit latrine?

<u>INCOMPLETE LIFE CYCLE</u>

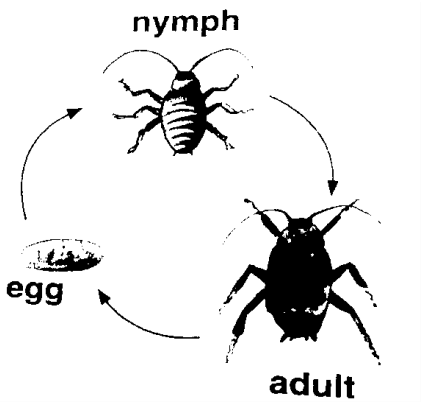
These are three stages of development insects undergo

Eggs – Nymph – Adult

<u>Examples of insects with incomplete metamorphosis</u>

- Grasshopper - crickets
- Cockroaches - termites - Locusts

<u>Illustration of the lifecyle of a cockroach</u>



<u>Importance of insects to people</u>

- Some insects are eaten as food
- Some insects pollinate flowers
- Some insects provide honey (honey bees)
- Some insects are source of income when sold (grasshoppers)

Dangers of insects

- Some insects spread diseases
- Some insects spoil clothes
- Some insects sting people
- Some insects destroy crops

Single celled organism

These are organisms with one cell

Examples of single called organisms

- Algae
- Euglena
- Protozoa

Algae

- They have chlorophyll and can make their own food
- They reproduce by means of spores
- Algae are found in soil, wood, moist rocks, water

Examples of algae

- Spirogyra
- Fucus
- Seaweeds
- Spirogyra is green in colour and found on the surface of ponds

Uses of algae

- They are used in making fertilizers
- They add oxygen to water which is breathed in by marine animals
- It is source of food to people and fish

Protozoa

Examples of protozoa

- Amoeba
- Paramecium
- Plasmodia
- Trypanosoma

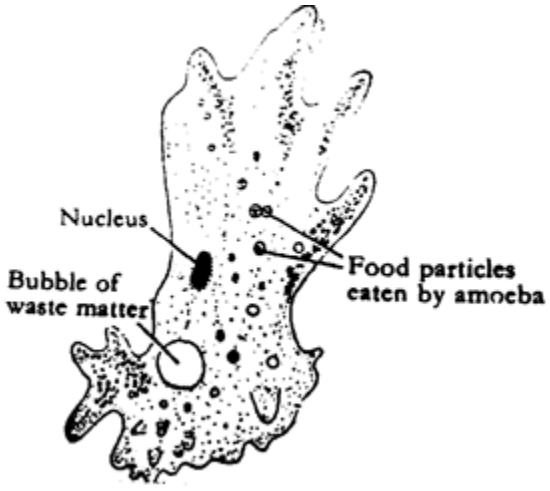
Diseases caused by protozoa

(a) Amoebic dysentery - amoeba
(b) Malaria - plasmodium
(c) Trypanosomiasis (nagana) - trypanosoma
(d) Sleeping sickness - trypanosoma

Amoeba

- It reproduces by means of binary fission
- It moves by pseudopodia (formation of false legs)
- It feeds by engulfing food

STRUCTURE OF AMOEBA



Activity

1. How do you call the larva stage of a cockroach?
2. Mention two diseases spread by a cockroach
3. How is a cockroach enable to spread diseases?
4. How is the reproduction in amoeba similar to that of a bacteria?

5. Suggest any two dangers of insects to people
6. Which diarrhoeal disease is caused by amoeba?
7. State two importances of algae
8. Name the disease caused by trypanosoma in animals
9. How does amoeba move?
10. Mention any two examples of useful insects.
11. How is amoeba different from bacteria in terms of movement?
12. How is a cockroach different from a spider?

THEME: MATTER AND ENERGY

TOPIC: SOUND ENERGY

- Sound is a form of energy that stimulates the sense of hearing

OR

Sound is a form of energy that enables us to hear

OR

Sound is a form of energy produced by vibration of matter

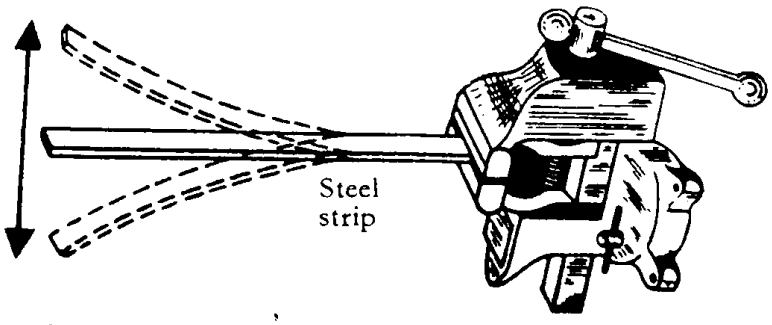
How is sound produced?

Sound is produced by the vibrations of objects

Vibration

This is the to and fro movement of an object

An illustration of vibration



Sources of sound

These are things that vibrate and produce sound

Natural sources of sound

- Erupting volcanoes
- Thunder
- Wind blowing
- Earthquake
- Baby crying
- A bird singing
- A man talking

How is sound produced by different living things?

(i) Mammals (man)
- By vibrations of the vocal cords

(ii) Birds
- By vibrations of rings of cartilage

(iii) Bees and mosquitoes
- By rapid flapping of their wings which cause air around to vibrate

(iv) Grasshoppers and crickets
- By rubbing their hind legs against their vibrating wings

Artificial sources of sound

- These are sources of sound which are made by man

Examples of artificial sources of sound

- Bell
- Drum
- Guitar
- Moving vehicles
- Aeroplanes
- Gun shot

Properties of sound

- Sound can be reflected
- Sound can be absorbed
- Sound travels in form of sound waves
- Sound needs a medium of transmission
- Sound can be stored and reproduced
- Sound travels to all directions from its source

Musical instruments

These are objects which produce sound

Groups of musical instruments

- Percussion musical instruments
- Wind musical instruments
- String musical instruments

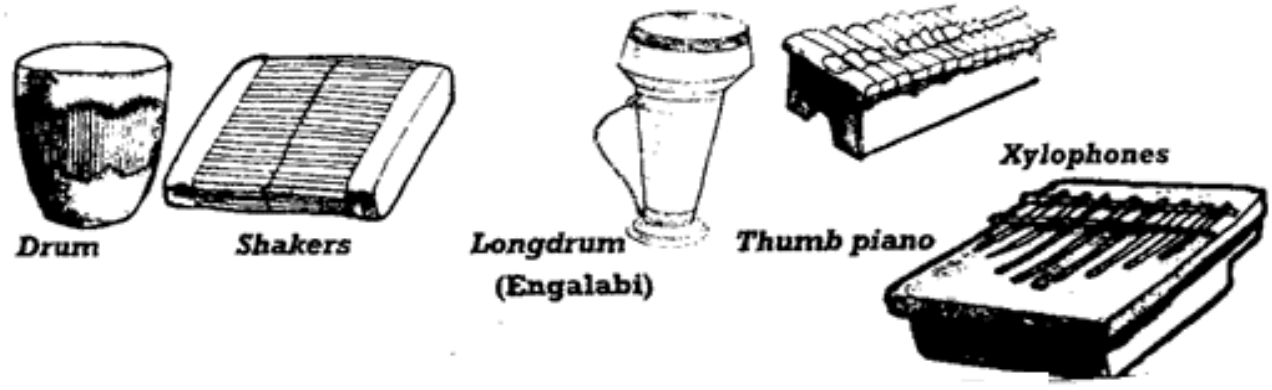
Percussion musical instruments

These are instruments which produce sound by vibrations of their surfaces when hit.

Examples of percussion musical instruments

- Bells
- Drums
- Shakers
- Xylophones
- Thumb piano

Illustrations of percussion musical instruments



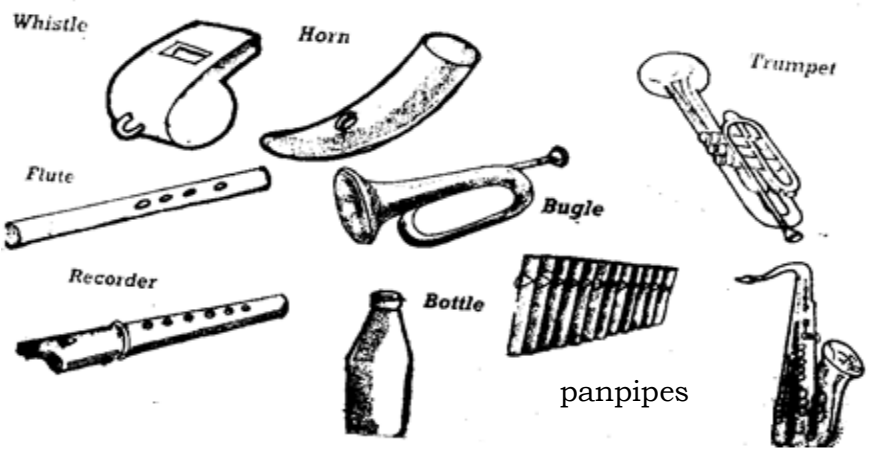
Wind musical instruments

These are instruments which produce sound by vibrations of air when blown into them.

Examples of wind musical instruments

- Flutes
- Trumpet
- Whistle
- Horn
- Bottles
- panpipes
- saxophone

Diagrams snowing wind musical instruments



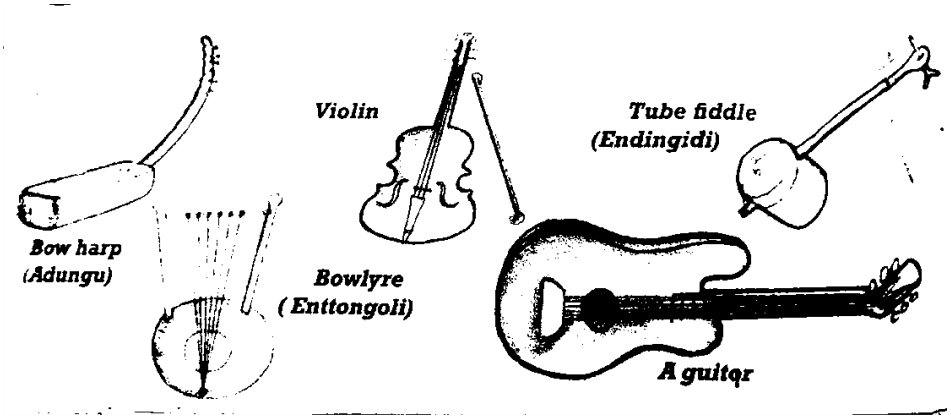
String musical instruments

These are instruments which produce sound by vibrations of the strings when plucked or rubbed

Examples of string musical instruments

- Guitar
- Bow harp
- Tube fiddle
- Violin
- Lyre

Diagrams showing string musical instruments



Activity

1. Define the term sound.

2. What do we call a form of energy that stimulates the sense of hearing
3. How do the following musical instruments produce sound?
   (i) Bow harp
   (ii) Flute
   (iii) drum
4. How do the following living organisms produce sound?
   (i) Man
   (ii) Crested crane
   (iii) Crickets
5. In which units is sound measured?
6. To which group of musical instruments do the following musical instruments belong?
   (i) Tube fiddle
   (ii) Shakers
   (iii) Bell

7. Which term refers to up and down movement of an object

<u>How sound travels</u>

By means of sound waves

Sound travels in all directions from the source

Media of sound transmission

- Solids
- Liquids
- Gases

<u>Note:</u>

Sound does not travel through a vacuum

<u>Reason</u>

There is no matter to transmit sound

<u>Speed of sound</u>

The speed of sound in solids, is 4900mls

The speed of sound in liquids is 1500mls

The speed of sound in gases is 330mls

Sound travels fastest in solids and slowest in gases

Factors that affect the speed of sound

- Altitude
- Wind
- Temperature

Altitude

Sound waves move easier downhill than uphill

Wind

Wind carries sound waves further if it blowing in same direction

If wind blows against sound, sound is obstructed

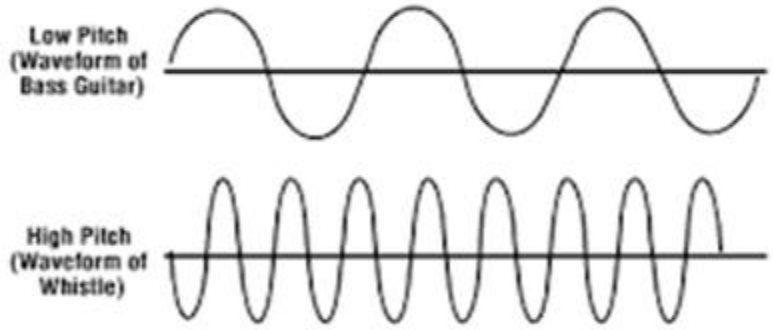
Temperature

Sound waves move nearer to the ground when temperature is low and travels high when temperature is high

Pitch of sound

Pitch is the highness or lowness of sound

Illustrations of pitch



Factors that determine the pitch of sound

- Nature of the vibrating material (object)
- Tension of the vibrating object
- Size of the vibrating object
- Length of the vibrating object
- Frequency

- Thickness of the object

Tension of the vibrating object

- Tension refers to how tight an object is
- A tight object produces higher pitch while a loose object produces lower pitch

Size of the vibrating object

A small vibrating object produces high pitch of sound while a big vibrating object produces low pitch of sound

Illustration

A

B

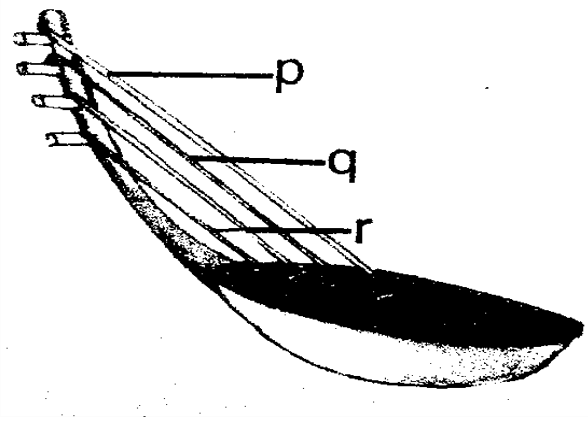
Drum A produces lower pitch of sound

Drum B produce higher pitch of sound

Length of the vibrating object

A long vibrating object produces low pitch while a short vibrating object produces high pitch.

Illustration



- String P produces lowest pitch of sound

- String r produces highest pitch of sound.

Frequency

- This is the number of vibrations produced by an object per second.
- High frequency produces high pitch while low frequency produces low pitch of sound

Volume

This is the loudness or softness of sound

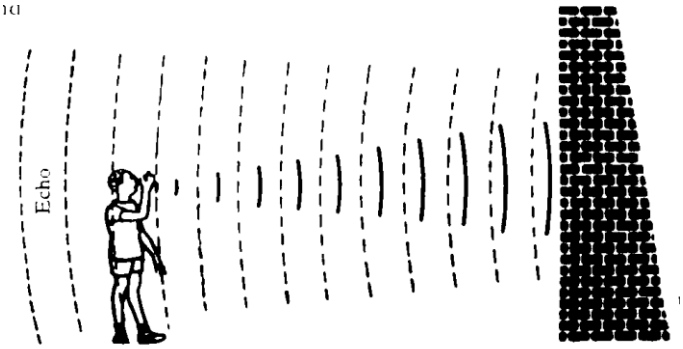
Amplitude

This is the width of vibrations

Echoes

- An echo is a reflected sound wave
- How are echoes formed?
- When sound waves are blocked by a hard surface

An illustration of echoes



Places where echoes are produced

- Empty rooms
- Valleys
- Caves
- Tall buildings
- Corridors
- Forests
- Mountains

Uses of echoes to;

(a) Bats
- For locating food
- For dodging obstacles

(b) Whales
- For dodging obstacles in water

(c) Sailors
- For detecting the depth of water bodies

(d) Pilots
- To avoid knocking tall buildings and mountains

Dangers of echoes

- They cause noise
- They make hearing difficult

Ways of preventing echoes

- By covering the walls with soft boards
- By covering the walls with thin curtains
- By making walls porous

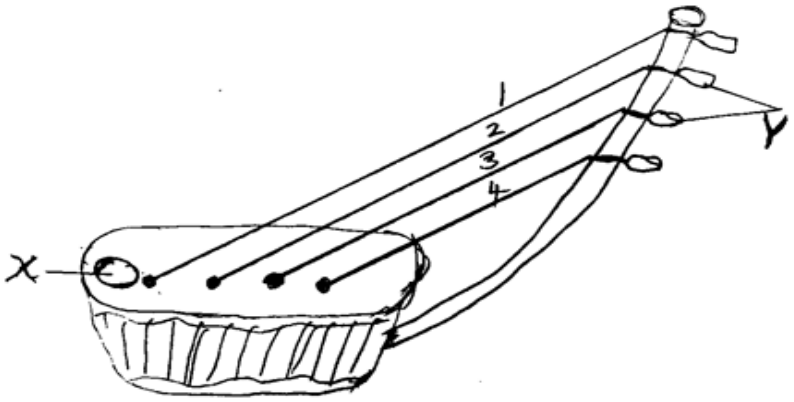
Question: How do soft boards reduce echoes?

They absorb sound waves

Activity

1. In which state of matter does sound travel fastest?
2. Why can't sound travel through a vaccum?
3. How can one increase the pitch of sound produced by a bow harp?

Study the diagram below and answer questions that follow



4. Which string will produce the highest pitch of sound when plucked?
5. Give a reason to support your answer in 4 above
6. To which group of musical instruments does the above instrument below?
7. State the importance of the tuners to the user
8. Give the importance of hole marked X on the above musical instrument.
9. Mention any one factor that affects the pitch of sound produced by the above musical instrument

<u>Calculating time and distance using speed of sound</u>

Example

1. A man heard a gunshot after 4 seconds. How far was he from the firing spot?

Distance	=	Speed x Time
D	=	330mls x 4s
D	=	(330 x 4) m
D	=	1320m

2. It took 4 seconds for Okongo to hear echoes of his mother's clapping. How far was Okongo from his mother?

Distance	=	Speed x Time
D	=	330mls x 2s
D	=	(330 x 2) m
D	=	660m

3. Amoti was standing across the valley which was 660m from the cliff. If he shouted, how long will it take to hear the echoes?

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time} = \frac{660\text{m}}{330\text{mls}} \times 2$$

$$\text{Time} = (2 \times 2)\ \text{S}$$

$$\text{Time} = 4 \text{ seconds}$$

Storing and reproducing sound

Storage

Sound can be stored by the following methods

(i) Recording
(ii) Writing musical notes

Devices used to store sound

- Compact discs
- Memory cards
- Flash discs
- Video tapes
- Phones
- Computer diskette
- Cassette tapes
- Mp3, Mp4
- Digital video disc
- Video compact disc

Devices used for reproducing sound

- Computer monitor
- Radio cassette
- DVD player
- MP3 player
- Gramo phones

- Cellular phones

Ways of reproducing stored sound

- By playing stored sound using a cassette player/ DVD play etc
- Singing solfa and staff notes
- By playing melodious musical instruments

Reasons for storing sound

- For entertainment
- Stored sound can be used as evidence in courts of law
- For communication

Notation

This is the act of writing music using notes

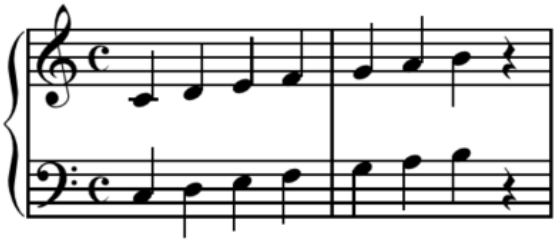
Types of notation

- Solfa notation
- Staff notation

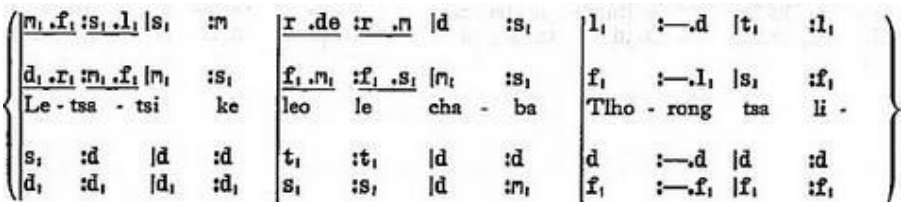
Illustrations showing staff and solfa notation

(a) Staff notation (symbols used)

This is the act of writing music sounding symbol



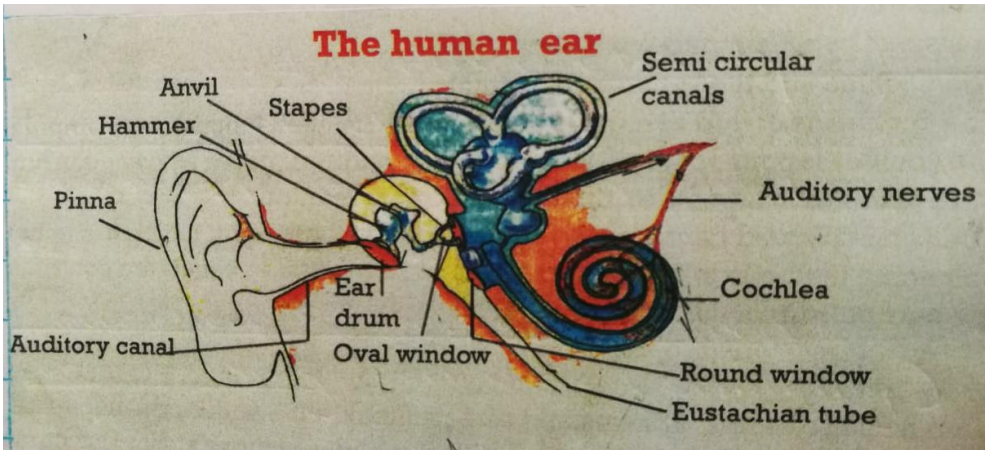
Sol-fa notation (Letters are used)



THE HUMAN EAR

- Ear is the sense organ for hearing
- It also used for body balance
- The ear is divided into three regions

THE STRUCTURE OF THE HUMAN EAR



Functions of parts of the human ear

Pinna: It collects sound waves in the environment

Auditory canal: It directs sound waves to the ear drum

Ear drum: Changes sound waves to sound vibrations

Ossicles: It amplifies sound vibrations

Cochlea: changes sound vibrations to sound impulses

Auditory nerve: It sends sound impulses to the brain for interpretation

Semi circular canal: It maintains body balance and posture

Eustachian tube: balances air pressure in the ear

Organs of hearing in fish, snakes, insects and birds

Organisms	Organ of hearing
Insects Fish Birds Snakes	Antennae Lateral line Auricular Inner cochlea

Diseases of the human ear

- Boils
- Otitis
- Otalgia

Boils

- A boil is a painful swelling containing pus
- It is caused by bacteria

Otitis

This is the inflammation of the ear

Disorders of the ear

- Deafness
- Boils
- Ear ringing

Deafness

This is a condition in which a person is unable to hear

Types of deafness

- Partial deafness
- Permanent deafness
- Sensory deafness

(i) Partial deafness

This is a condition when a person cannot hear sound produced clearly

Causes of deafness

- Too much wax in ear canal

Correction of partial deafness

- By removing ear wax (syringing)

(ii) Permanent deafness

This is a condition when a person cannot hear any sound produced

Causes of permanent deafness

- Serious damage of the ear drum

- Diseases e.g Rubella, measles

(iii) Sensory deafness

This is a condition when a person cannot differentiate between sound

Causes of sensory deafness

- Old age
- Diseases and injuries of auditory nerve
- Serious fracture on the skull
- Living in too noisy places for a long time

Prevention of deafness

- Regular cleaning of ears to remove wax
- Cleaning ears using soft tissues
- Treating ear infections early
- Avoid staying in noisy places
- Having proper feeding

Care for ears

- Cleaning regularly
- Avoid using sharp objects to clean ears
- Wearing protective gears when working in noisy places
- Having regular medical checkups
- Having proper feeding

Activity

1. How is wax important in the ear?
2. Apart from hearing, give any other function of the human ear
3. Which part of the human ear works likes halteres of an insect?
4. How are ears important to a deaf person?
5. What is the difference between pitch and volume of sound?
6. Which part of the ear sends messages to the brain?
7. Suggest two ways of keeping our ears in good working condition.
8. What enables a guitar to produce different pitched sound?
9. Give one way of increasing and reducing pitch of a bow harp
10. How can partial deafness be corrected?
11. Which part of the ear balances air pressure in the ear?
12. Mention any two groups of musical instruments

THEME: HUMAN BODY

TOPIC: THE CIRCULATORY SYSTEM

Circulatory system is a body system responsible for movement of blood in the body

Components of the circulatory system

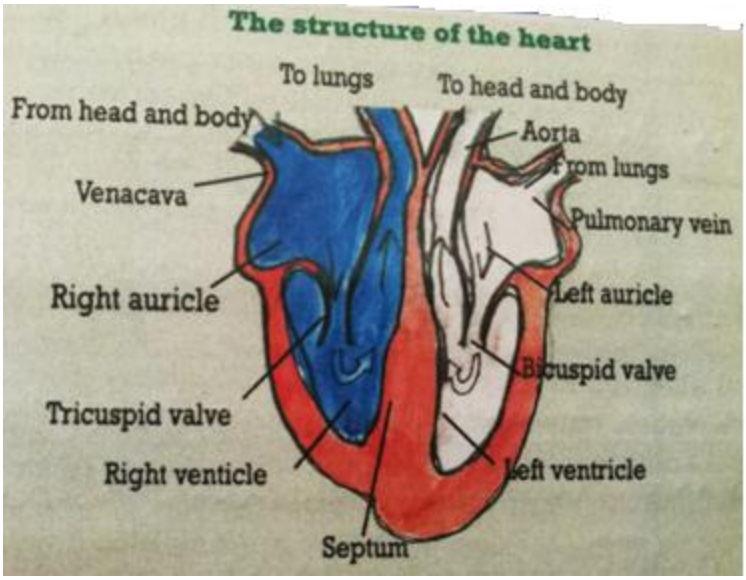
- Heart
- Blood
- Blood vessels

THE HEART

A heart is a muscular pumping organ of the body

- It is found in the chest cavity
- It is protected by the rib cage
- It is made up of strong muscles called cardiac muscles
- It is enclosed in the pericardium membrane
- Pericardium membrane produces pericardial fluid that lubricates the heart
- It has four chambers
- The upper chambers of the human heart are called auricles (atria)
- The lower chambers of the human heart are called ventricles
- The heart is divided into left and right side by the septum

<u>Structure of the human heart</u>



Functions of the parts

1. Venacava
   - It carries de-oxygenated blood from all body parts to the heart
   - It is the main and the largest vein in the body.

2. Pulmonary artery
   - It carries deoxygenated blood from the heart to the lungs
   - It is the only artery which carries de-oxygenated blood

3. Pulmonary vein
   - It carries oxygenated blood from the lungs to the heart
   - It is the only vein which carries oxygenated blood

4. Aorta
   - It carries oxygenated blood from the heart to all body parts
   - It is the main and the largest artery in the body

5. Valves
   - They prevent the backward flow of blood

6. Septum
   - It prevents oxygenated blood from mixing with deoxygenated blood

Question; Why is the left side of heart made of thicker muscles

- It pumps blood with greater pressure to a longer distance

Question: Why does blood go to the lungs before being circulated to all body parts?

- To drop carbon dioxide and pick oxygen

Note:

- The normal heart beat of a person is 72 times per minute
- The instrument used to listen to the heart beat is called stethoscope
- The instrument used to measure blood pressure is called sphygmomanometer

Factors that increase heart beat

- extreme fear
- sickness
- vigorous exercises
- anxiety

BLOOD

This is a red liquid substance which circulates in the body

Components of blood/composition of blood

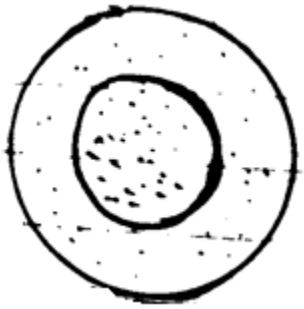
- red blood cells (erythrocytes)
- white blood cells (leucocytes)
- blood plasma
- blood platelets (thrombocytes)

Red blood cells

- They are disc shaped
- They have no nucleus
- They have a red pigment called haemoglobin
- Haemoglobin is built from iron.
- Lack of iron in our diet results into shortage of red blood cells (anaemia)
- Haemoglobin gives blood red colour
- Haemoglobin combines with oxygen to form oxy-haemoglobin

- Red blood cells are made in red bone marrow of short bones
- Red blood cells are affected by plasmodia

Diagram of red blood cells



Functions of blood cells

They transport oxygen in the body

Note;

The mineral salt responsible for formation of red blood cells is called iron

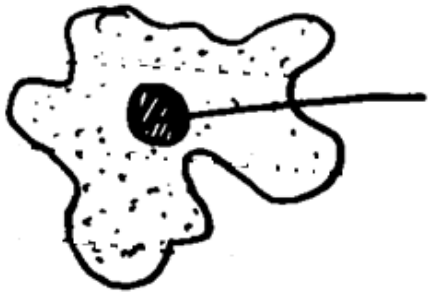
How are red blood cells adapted to their functions?

- They do not have a nucleus which gives a larger surface area for carrying oxygen
- They have haemoglobin which carries oxygen in the body

White blood cells

- They do not have a proper shape
- They are made in yellow bone marrow of long bones, in the spleen and lymph nodes

Diagram of a white blood cell



Function of white blood cells

They fight against diseases causing germs

How do white blood cells fight against disease causing germs

- By engulfing germs
- By producing antibodies

Adaptations of white blood cells to their function

- They have an irregular shape for engulfing germs
- They have a nucleus that produces antibodies.

Blood platelets

- These are the smallest disc shaped blood cells in the body
- They are made in the red bone marrow
- They are stored in spleen
- They do not have a nucleus

Structure of blood platelets

Functions of blood platelets

They help in blood clotting

Blood plasma

This is the liquid part of blood

Components of blood plasma

- Water
- Oxygen
- Mineral salts
- Urea
- Hormones
- Carbon dioxide
- Digested food
- Drugs

Functions of blood plasma

- It transports waste materials to excretory organs
- It transports digested food in the body
- It transports medicine to areas of target
- It transports hormones to areas of target
- It distributes heat in the body

Structural differences between red blood cells and white blood cells

Red blood cells	White blood cells
Have a disc shape Have no nucleus	Have irregular shape Have nucleus

Functional difference between white blood cells and red blood cells

- White blood cells fight against disease causing germs while red blood cells transport oxygen in the body

Functions of blood

- Blood transports digested food in the body
- Blood transports oxygen in the body
- Blood fights against disease causing germs
- Blood distributes heat in the body
- Blood transports waste products to the excretory organs
- Blood transports hormones to areas of target
- Blood transports medicine to areas of target

Ways of increasing the volume of blood in the body

- Through blood transfusion
- Eating food rich in iron
- Swallowing iron tablets

Activity

1. Which part of the skeleton protects the heart?
2. Why is blood pumped to the lungs before being taken to all body parts?
3. How is pulmonary vein different from pulmonary artery?
4. Why is the right ventricle of the heart made up of thin walls?
5. Which chamber of the heart receives blood from all body parts?
6. Which chamber of the heart receives blood from the lungs?
7. Which type of blood is carried by;

(i) Vena cava?
(ii) Aorta?

8. What happens to blood while in the lungs?
9. Why is blood transported from the lungs back to the heart?
10. Which component of blood transports digested food to the body?
11. How is a skeleton important to the circulatory system?
12. Which blood cells are affected by malaria?
13. How are platelets important in the body?
14. Give one way how white blood cells defend the body against diseases causing germs
15. Mention any waste material carried by blood
16. State the function of haemoglobin found in the red blood cells
17. Why do red blood cells lack a nucleus?

Blood groups

There are four blood groups namely;

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

Blood donor

This is a person who gives blood

Blood recipient

This is a person who receives blood

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

Note:

- A person with group AB is called a universal recipient because he receives blood from all blood groups
- A person with blood group O is called a universal donor because he gives blood to all blood groups but receives blood from blood group O only

Note:

Blood should be screened before it is donated to prevent transfusion of infected blood

Blood transfusion

This is the transfer of screened blood from one person to another as long as blood groups agree

How do people lose blood?

- Due to untreated malaria, women loose blood when giving birth

Question: Why should blood be screened before transfusion?

- To identify the blood groups
- To check for blood diseases

BLOOD VESSELS

These are muscular tubes that carry blood in the body

Types of blood vessels

- Arteries
- Veins
- Blood capillaries

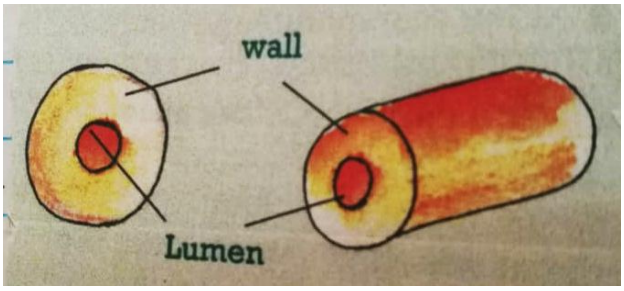
Arteries

These are blood vessels which carry blood away from the heart

Characteristics of arteries

- They have thick walls
- They have a narrow lumen
- They have no valves
- They carry blood away from the heart
- They carry blood with great pressure

Structure of an artery



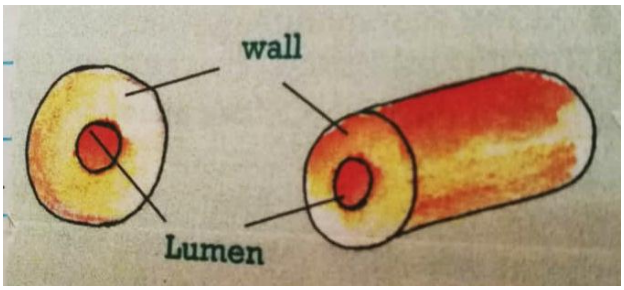
Veins

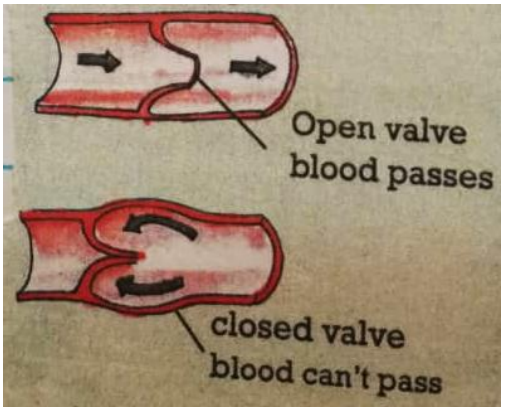
These are blood vessels which carry blood towards to the heart

Characteristics of veins

- They have thin walls
- They have a wide lumen
- They have valves
- They carry blood towards to the heart
- They carry blood with low pressure

Structures of veins





Structural differences between arteries and veins

Arteries	Veins
Have a narrow lumen	Have a wide lumen

Have thick walls Have no valves	Have thin walls Have valves

Functional differences between arteries and veins

- Arteries carry blood away from the heart while veins carry blood towards to the heart

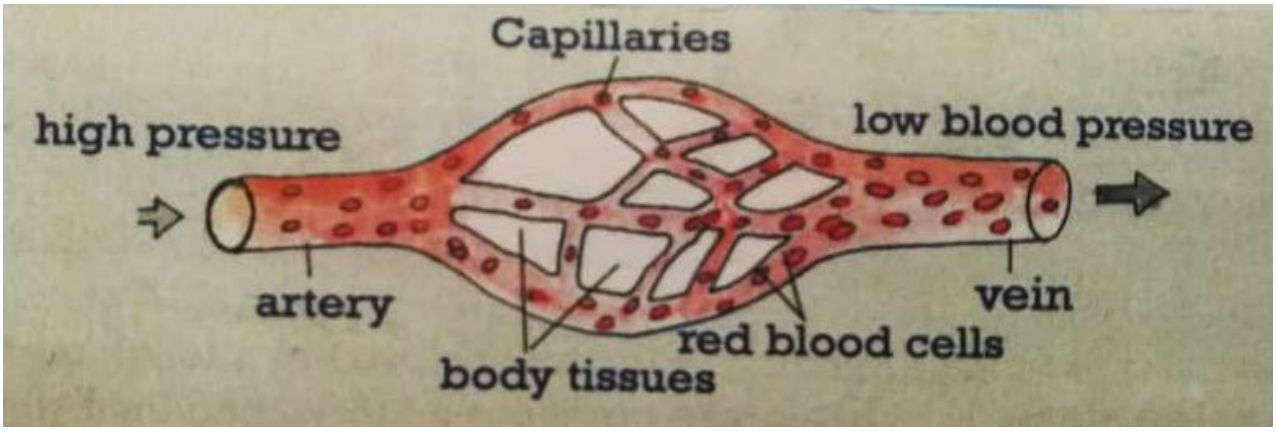
Blood capillaries

These are blood vessels which join arteries to veins

Characteristics of blood capillaries

- They are thin walled

Structure of blood capillaries



Function of blood capillaries

- They allow exchange of body materials to take place
- They join arteries to veins

Question: How are blood capillaries adapted to exchange of materials?

- They are thin walled for easy diffusion of body materials
- They are many in number to increase the surface area for absorption of materials

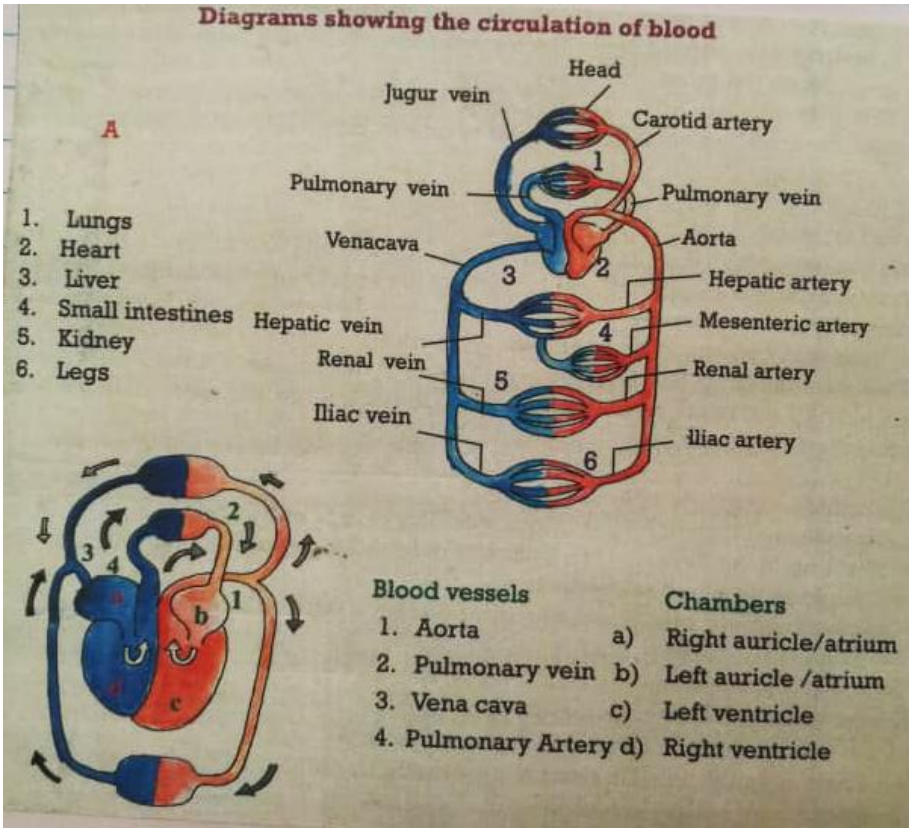
NOTE:

Blood capillaries are the smallest blood vessels in the body

Blood circulation

This is the movement of blood around the body

A diagram showing blood circulation



Organs related to blood circulation

1. Lungs
   - For oxygenating blood

2. Liver
   - It regulates amount of sugar in blood

3. Kidneys
   - They filter blood

4. ileum
   - It supplies blood with digested food

5. Heart
   - It pumps blood in the body

Activity

1. State the roles of blood vessels in the body
2. What enables arteries to carry blood with high pressure?
3. How are valves important in the vein?
4. How are arteries different from veins in terms of their function?
5. State any one structural difference between veins and arteries
6. In the space provided below, draw a red blood cell
7. Why do arteries have thick walls?
8. Why is blood transported to kidneys?
9. In which way are blood capillaries useful in the body?
10. State one adaptation of capillaries in the body
11. Why should blood be screened before transfusion?
12. Name the red pigment found in the red blood cell
13. How are red blood cells adapted to their function?

Diseases and disorders of the circulatory system

Blood diseases

(i) AIDS
(ii) Anaemia
(iii) Sickle cell anaemia

(iv) Malaria
(v) Leukaemia (blood cancer)
(vi) Haemophilia (Poor clotting of blood)
(vii) High blood pressure

Heart diseases

- Heart failure
- Heart stroke
- Coronary heart disease
- Cardiac arrest

Disorders of circulatory system

- Heart attack
- Heart failure
- Hardening of blood vessels

AIDS

AIDS in full is Acquired Immune Deficiency Syndrome

AIDS is caused by HIV (Human Immunodeficiency virus)

AIDS is a sexually transmitted diseases

HIV attacks and destroys white blood cells

How AIDS spreads

- Through having unprotected sex with an infected person
- Through sharing unsterilized skin piercing objects with an infected person
- Through transfusion using infected blood
- Through breast feeding by infected mothers
- From infected mother to unborn baby at birth

Signs and symptoms of AIDS

- Loss of body weight
- Prolonged dry cough
- Persistent fever

- Skin rashes
- Chronic diarrhoea
- Fever
- Persistent headache
- Herpes zoster
- Oral thrush

Effects of AIDS to;

(1) An individual
- Loss of immunity
- It leads death
- It leads to poverty
- It creates worries

(2) Family
- It leads to increased number of orphans
- It leads to misery to the family members
- It leads to poverty
- It leads to family breakups

(3) Community
- It leads to loss of skilled labour
- It leads to under development
- It leads to reduced population

Prevention of AIDS

- Abstain from sex
- Be faithful to your sexual partner
- Use of condoms properly
- Screening blood before transfusion
- Using sterilized skin piercing objects
- Having several blood checkups before sexual intercourse.

Care for AIDS patients

- Counselling them regularly
- Comforting them
- Provide regular medical attention
- Encouraging them to take their medication

- Providing them with a balanced diet

PIASCY

Qn. Write PIASCY in full

Presidential initiative on AIDS Strategy for Communication to Youth

PIASCY messages

- Say no to sex
- Avoid gifts from strangers
- Virginity is healthy
- Avoid bad touches
- AIDS kills
- AIDS has cure

Importance of PIASCY messages

- They prevent STD's
- They prevent early pregnancies
- They prevent early marriages
- They prevent school dropouts

Care for circulatory system

- Doing regular body exercises
- Eating a balanced diet
- Avoid smoking and taking alcohol
- Going for regular medical checkups

Importance of regular physical exercises

- They strengthen heart muscles
- They promote body fitness
- They reduce fats in the body
- They reduce the risks of suffering from heart diseases

Activity

1. Name any one hereditary disease that affects the circulatory system
2. How can AIDS be controlled among married couples?
3. Write ABC in full as used in the control of AIDS
4. How are PIASCY messages important to the school going children?

5. State the best way of controlling AIDS among P.6
6. pupils
7. Mention one way AIDS can be spread from the mother to her unborn baby
8. Write AIDS in full
9. State any one danger of having unprotected sex
10. State two ways of avoiding the diseases that affect the circulation system
11. What causes AIDS?
12. Mention any one disease that affects white blood cells
13. How does HIV affect the circulatory system?
14. Mention the component of blood affected by the following diseases
    (i) Sickle cell anaemia
    (ii) AIDS
    (iii) Haemophilia
15. Why is AIDS still a problem in Uganda?

TOPIC: ALCOHOL, SMOKING AND DRUGS IN SOCIETY

ALCOHOL

- Alcohol is any liquid substance that makes one drunk when taken in excess
- Alcohol is a chemical substance that makes one drunk when taken in excess

<u>Types of alcohol</u>

- Methanol alcohol
- Ethanol alcohol

<u>Methanol alcohol</u>

This is a type of alcohol which is poisonous and can cause blindness

<u>Ethanol alcohol</u>

- This is a type of alcohol which is contained in most alcoholic drinks
- It is addictive and toxic to the body

Examples of alcoholic drinks that contain ethanol alcohol

- Beer
- Wine
- Spirits
- Malwa
- Kwete
- Munanansi
- Mulamba
- Tonto

Methods of making alcohol

- Fermentation
- Distillation

Fermentation

- This is the process by which sugar in juices is turned into alcohol by the help of yeast
- Yeast speeds up fermentation process
- Yeast produces enzyme called zymase

Examples of alcoholic drinks produced by fermentation

- Malwa
- Beer
- Wine
- Tonto
- Malwa
- Kwete
- Munanansi

Materials used to make fermented alcohol

Alcohol	Materials
Malwa	Millet, sorghum, cassava
Tonto	Banana
Kwete	Cassava, maize
Munanansi	Pineaples
Beer	Barley, sorghum

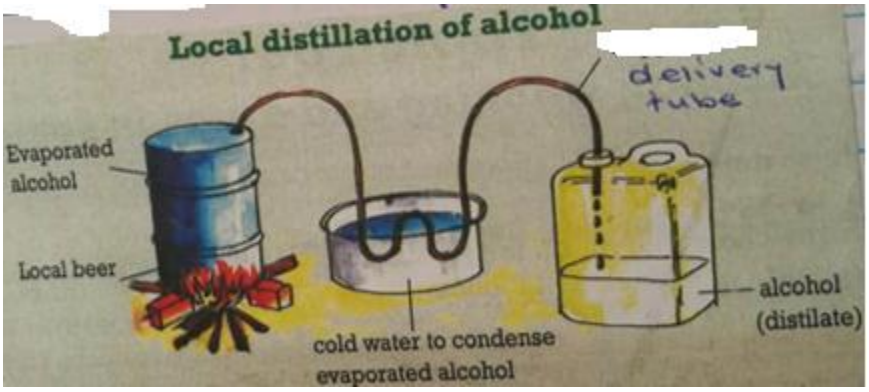
Distillation

This is a process of boiling crude alcohol to obtain pure alcohol by evaporation and condensation.

Examples of alcoholic drinks obtained by distillation

- Waragi (Enguli)
- Whisky
- Vodka
- Gin

Diagram showing distillation of alcohol



Note:

- Delivery tube carries alcohol vapour and distillate
- Delivery tube is made of copper because it does not easily rust
- Delivery tube is coiled to increase the surface area for condensation
- Delivery tube is passed through cold water to condense alcohol vapour
- The substance obtained after distillation is called distillate
- Fire is a source of heat that causes evaporation of crude alcohol

Physical processes involved in distillation of alcohol

- Evaporation
- Condensation

Uses of alcohol

- Alcohol is used as fuel in cars
- Alcohol is used in making drugs

- Alcohol is used for sterilizing medical equipments
- Alcohol is used to disinfect body areas of injection
- Alcohol is used to make disinfectants like sanitizer
- Alcohol is a source of income when sold
- Alcohol is used to make soap

Reasons why people take alcohol

- To pass time (pastime)
- To forget their problems
- To be confident
- To be happy
- To celebrate success
- To fit in peer groups
- To break boredom

Factors that lead to alcoholism

- Stress
- Poor family background
- Peer group influence
- Idleness
- Seductive advertisement
- Poor social environment

Alcoholism

This is a condition which results from depending on alcohol for normal body functioning

Alcoholic

This is a person who is addicted to alcohol

This is a person who depends on alcohol for normal body functioning

Effects of alcoholism to;

(i) An individual
- It leads to self neglect
- It leads to loss of job
- It damages some body organs ie liver, brain and pancreas
- It leads to peptic ulcers

- It lowers concentration at work

(ii) Family
- It leads to family neglect
- It leads to low family development
- It leads to child abuse
- It leads to spouse abuse
- Children may copy the habit of drinking alcohol

(iii) Community
- Leads to high crime rate
- It leads to road accidents
- It leads to low community development
- It leads to poor job performance

Laws governing alcohol in Uganda

- All forms of home distillation are not allowed
- Alcohol is not for sale to people under the age of 18 years
- People are not allowed to drive vehicles under the influence of alcohol
- Customers are not allowed to drink in off licensed places

Ways of avoiding alcoholism

- Avoid bad peer groups
- Learn more facts about alcohol
- Join good social groups
- Get activities to occupy you during your free time
- Decide one day never to take alcohol

Activity

1. Write down any two reasons people give for taking alcohol
2. Mention two methods of making alcohol
3. Identify any two materials from which alcohol is made
4. How is alcohol useful to health workers?
5. In which two ways does alcohol affect the family?
6. What term is referred to as prolonged use of alcohol to an individual?
7. Identify two signs of brain damage as a result of alcoholism

8. Name the scientific name given to liquid collected after distillation
9. What is the role of heat in the process of distillation of alcohol?
10. Why is home distillation of alcohol discouraged?

SMOKING

This is the inhaling of smoke from burning tobacco

Types of smoking

- Active smoking
- Passive smoking

(a) Active smoking

This is the inhaling of smoke directly from burning tobacco

Who is an active smoker?

This is a person who inhales smoke directly from a burning tobacco

(b) Passive smoking

This is the inhaling of air containing tobacco smoke from an active smoker

Who is a passive smoker?

This is a person who inhales air containing tobacco smoke from an active smoker

Substances found in tobacco

Tar – causes lung cancer and also stains the teeth

Nicotine – causes addiction

Tobacco smoke contains the poisonous gas called carbonmonoxide

Dangers of carbon monoxide in the body

- It reduces the amount of oxygen in blood

Ways how people use tobacco

- By smoking
- By chewing tobacco leaves
- By sniffing tobacco powder

Reasons why people smoke

- To feel warm
- To pass time
- To fit in peer groups
- Young smoke to act mature
- Some adverts about cigarretes are attractive
- They smoke to show that they are rich
- Some smoke to look sophisticated

Effects of smoking to;

(a) An individual
- It causes lung cancer, emphysema and bronchitis
- It stains the teeth
- It leads to self neglect
- Causes bad breath
- It causes lip cancer
- It destroys the taste buds
- It worsens the respiratory diseases

(b) Family
- It leads to family neglect
- Children copy the habits of smoking
- It encourages passive smoking to family members
- It leads to poverty in the family
- It may lead to fire outbreak

(c) Community
- It leads to air pollution
- It leads to fire outbreak
- It leads to passive smoking
- It worsens respiratory diseases of people in the community

(d) Pregnant women
- It leads to still birth
- It leads to premature birth

- It leads to miscarriage
- It leads to low birth weight/underweight babies

How to avoid smoking

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

Questions;

1. Define the term smoking
2. Give a difference between active and passive smoking
3. Name two dangerous chemicals found in tobacco
4. State two factors that lead to smoking
5. How dangerous is smoking to a pregnant mother?
6. Why do smokers often lose appetite for food?
7. Name the dangerous gas that is found in tobacco smoke?
8. How is tar a dangerous chemical in tobacco?
9. Who is an active smoker?
10. Why is it difficult for one to stop smoking?
11. Write down one disease that can be caused by smoking
12. How has the government of Uganda tried to reduce the problem of smoking in the country?
13. How can a P.6 child try to avoid the temptation of smoking?

DRUGS

A drug is a chemical substance that changes the normal body functioning

Types of drugs

- Essential drugs
- Narcotic drugs (drugs of dependency)

Essential drugs

These are drugs which meet people's health needs

Characteristics of essential drugs

- They meet people's health needs
- They cure diseases
- They are safe and effective if used well
- They are affordable and readily available

Qualities of essential drugs

- They should be affordable
- They should be safe to use
- They should be effective if used well
- They should be easy to use
- They should be available

Note: Qualities of essential drugs can be remembered by a cronym "ASEEA"

A - Affordable

S - Safe to use

E - Easy to use

E - Effective when properly used

A - Available/Accessible

Essential drugs are classified according to their uses

These include;

(i) Preventive drugs (vaccines)
These are drugs which prevent diseases e.g vaccines

(ii) Curative drugs
These are drugs which cure diseases e.g fansider, quinine, coartem, chloroquine, aloevera, mululuza, bombo

(iii) Pain killers
These are drugs which relieve body pain e.g paracetamol, ibrufen, indocid, dichlofenac, painex, headex

(iv) Contraceptives
These are drugs which control pregnancy e.g Levora, apri

Types of essential drugs

- Traditional drugs
- Laboratory manufactured drugs

Traditional drugs

These are drugs which are made from available local materials

Characteristics of traditional drugs

- They are not well labelled
- They are not well packaged
- They do not have clear expiry date
- They do not have manufactured date
- Their effects on human health is not known
- They have low purity

Advantages of traditional drugs

- They are cheap
- They are commonly available

Disadvantages of traditional drugs

- They have low purity
- They are not tested
- They don't have a proper dosage
- Their side effect on human health is not known

Examples of traditional drugs

- Enkejje
- Mululuza
- Black jack
- Bombo
- Aloe vera

Laboratory manufactured drugs

These are drugs which are made by physicians in the laboratories

Characteristics of laboratory manufactured drugs

- They are well packaged
- They are well labelled
- They have expiry and manufactured dates
- They have high purity
- They are carefully made and tested

- Their side effect on human health is well known

Advantages of laboratory manufactured drugs

- They have a high purity
- They are well packaged and labelled
- They are carefully made and tested
- Their side effect on human health is well known

Disadvantages of laboratory manufactured drugs

- They are expensive
- They can lead to overdose if not used well

Examples of laboratory manufactured drugs

- Panadol
- Mabendazole
- Vitamin C
- Coartem
- Flagyl
- Quinine

Drug prescription

This is a written information by a health worker on how to use a drug

Information used in drug prescription

- name of the drug
- dosage
- duration for taking the drug

Dosage

This is the amount of drug taken once or regularly over a period of time

Factors to consider when prescribing drugs

- patient's age
- the weight of the patient
- degree of illness
- nature of the disease

Importance of drug prescription

- It prevents a patient from taking overdose and under dose
- It prevents a patient from taking a wrong drug

Dangers of taking unprescribed drugs

- One may take over dose or under dose
- One may take a wrong dose

Under dose

This is the taking of less drugs than what is prescribed

Under dose makes germs resistant to drugs

Over dose

This is the taking of more drugs than what is prescribed

Over dose leads to drug poisoning

Drug misuse

This is the use of a drug without health worker's instructions

Ways how drugs are misused

- Taking drugs when not sick
- Sharing drugs prescribed for one person
- Taking unprescribed drugs
- Taking under dose through self-medication
- Taking over dose
- Through self-medication
- Taking drugs when not sick

Qn: Who is a drug addict?

A drug addict is a person who cannot do anything without taking drugs.

Qn. What is drug addiction?

- Drug addiction is a condition in which a person cannot do anything without a certain drug
- Drug addiction is a condition that results from prolonged use of drugs

Factors that lead to drug misuse

- Ignorance
- Severe pain
- Too sweet drugs
- Poor storage of drugs

Effects of drug misuse

- It leads to drug poisoning
- It delays recovery from sickness
- It leads to wastage of money
- It worsens the disease

Proper storage of drugs

- Keeping drugs out of children's reach
- Keep drugs in cool dry places
- Keep drugs away from direct sunlight

Dangers of buying drugs from local shops/unauthorized dealers

- Drugs may not be well prescribed
- Drugs may be fake
- Drugs may be contaminated
- Drugs may be expired

Narcotic drugs/drugs of dependency

These are drugs which cause addiction after a prolonged use

Drug dependency

This is a condition when a person depends on a drug for the normal body functioning

Examples of narcotic drugs/drugs of dependency

- Marijuana (cannabis)
- Miraa (khat)
- Cocaine
- Alcohol

- Opium
- Heroin
- Glue
- Caffeine
- Nicotine
- Petrol

Ways how narcotic drugs are introduced in the body/used

- By chewing
- By sniffing
- By swallowing
- By injecting them into the body

DRUG ABUSE

This is the use of a drug in a way that is harmful to the body

Commonly abused drugs

- Marijuana
- Miraa
- Alcohol
- Opium
- Heroin
- Petrol
- Jet fuel
- Nicotine
- Caffeine
- Cocaine

Reasons why people abuse drugs

- To fit in peer groups
- To get energy
- To pass time
- To relieve pain
- To get more appetite
- To stay awake
- To concentrate on work
- To feel confident
- To induce sleep

Effects of drug abuse/drug dependency to;

(i) An individual
- It leads to brain damage
- It leads to loss of appetite
- It leads to self neglect
- It leads to poverty

(ii) Family
- It leads to poverty
- It leads to family neglect
- It leads to domestic violence

(iii) Community
- It leads to high crime rate
- It leads to road accidents
- It leads to poor job performance

Life skills to safeguard against alcoholism, smoking and drug dependency

- A skill of self esteem
- A skill of assertiveness
- A skill of copying with stress
- A skill of problem solving
- A skill of decision making

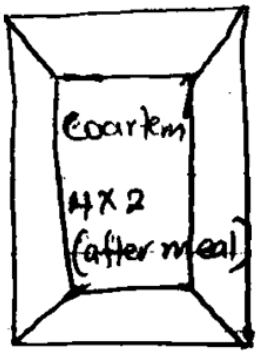
Ways of avoiding alcoholism, smoking and drug dependency

- Avoid bad peer groups
- Learn more facts about effects of drugs
- Spending leisure constructively

Activities

1. Define the term “drug addiction”
2. Give two reasons why people abuse drugs
3. Explain the term drug of dependency
4. Mention any two examples of commonly abused drugs in our community
5. State any two effects of narcotic drugs to an individual
6. Explain the term drug abuse

7. Below is a diagram showing a pocket of medication that was given to Sostine after going to hospital. Use it to answer questions below.



(a) What name is given to the above written information?
(b) Briefly explain how sostine is supposed to take the medication
(c) How many tablets do you think sostine has to take in a day?
(d) Supposing Sostine takes the medicine only once a day, what health danger would happen to him?

8. State one danger of buying drugs from streets and local shops
9. Mention any three areas where drugs should be sold.
10. Mention two ways how people misuse drugs
11. Who is a drug addict?
12. Give any two life skills that can help a P.6 pupil to guard him/herself against drug dependence
13. Explain the meaning of the term drug prescription
14. State any one danger of under dose/overdose
15. State any one factor doctors consider when prescribing drugs
16. Give two ways how one can avoid alcoholism in the society