**JANAN P/S WOBULENZI CAMPUS**

**P6 SCIENCE NOTES FOR TERM ONE 2024.**

**THEME: WORLD OF LIVING THINGS**

**KINGDOMS OF LIVINGTHINGS**

1.Animal Kingdom

2. Plant Kingdom

3. Fungi Kingdom

4. Bacteria (Monera) Kingdom

5. Protoctista Kingdom

**TOPIC: CLASSIFICATION OF ANIMALS**

**CLASSIFICATION OF VERTEBRATES.**

* Classification means grouping of organisms according to their common characteristics.

**Why is it important for organisms to be classified?**

* For easy identification

**FEATURES USED TO CLASSIFY ANIMALS**

1. Mode of movement.
2. Mode of reproduction.
3. Mode of respiration.
4. Number of legs
5. Their response to stimuli
6. Colour,size and shape
7. Mode of feeding

**Basic characteristics of living things are:**

|  |  |  |
| --- | --- | --- |
| * They reproduce. | * They respire | * They feed |
| * They grow | * The excrete | * They respond to stimuli |
| * They move/locomote | | |

**Groups of animals**

1. Vertebrates (animals with a back bone/vertebral column/spine)
2. Invertebrates (animals without a back bone/vertebral column/spine).

**Characteristics of vertebrates.**

1. Vertebrates have back bones.
2. Vertebrates have endo skeletons.
3. They have water proof skins.

**Classification of vertebrates.**

* **Warm blooded vertebrates**

1. They are vertebrates with constant body temperatures when they are healthy.
2. Animals whose body temperature does not change according to the environment.

**Examples:**

birds and mammals.

* **Cold blooded animals** are vertebrates whose body temperature changes according to the environment.

**Examples:**

reptiles, amphibians and fish.

**BIRDS**

**New words**

1. **Homoeothermic**: *Animals; Animals whose body temperature does not change according to the environment.*
2. **Fertilization:** *The union of the male and the female gametes to form a zygote*

A bird is warm blooded vertebrate whose forelimbs are modified into wings and has feathers on its body.

**Characteristics of birds.**

1. They are warm blooded (homoeothermic, homoiotherms).
2. Their legs are covered with scales and the body with feathers.
3. They reproduce by laying eggs.
4. They undergo internal fertilization.
5. They breathe using lungs.
6. They are stream lined to overcome viscosity friction when flying.
7. Their hearts have four chambers.
8. Birds give care to their young ones.
9. They have endo skeleton.
10. Birds are vertebrates.

**ADAPTATIONS OF BIRDS TO THEIR MODE OF LIFE.**

**Adaptation** means the features that make an organism suit its characteristic or behavior.

1. Their dry and loose skins produce the feathers.
2. Birds have spurs on their legs for protection/defense.
3. Feathers on the bodies of birds protect them from injuries.
4. Birds that can fly have hollow bones to reduce their body weight during flight.
5. They have nictitating membranes which prevent foreign bodies from entering their eyes when flying

.

**Advantages/uses of birds to people**

1. Birds provide people with meat.
2. Birds provide people with eggs.
3. Sun birds help in plant pollination.
4. Scavenger birds help to keep the environment clean by eating the carrion.
5. Domestic birds are sold to get money.
6. Birds help in seed dispersal

**Disadvantages of birds in the environment.**

1. Birds spoil farmer’s crops by getting materials to make their nests from the crops.
2. Weaver birds cause noise pollution in the environment.
3. Some birds are pests

**Activity.**

1. Watch birds in your home and in your neighborhood. Write at least five names of the birds you have seen in English and in your local language.

**EXERCISE**

1. List any two characteristics of birds.
2. Why is a bird regarded as a vertebrate?
3. Write one sentence to explain the following terms;
4. Warm blooded animals
5. Cold blooded animals
6. In one sentence give a reason why animals move.
7. Give one way in which you can identify birds from other vertebrates.

6. How are claws useful to birds?

7. State the type of fertilization birds undergo

**GROUPS OF BIRDS**

**New words**

1. **Prey:** An animal that is hunted and killed by a predator for food.
2. **Scavenger bird:** A bird that feeds on carrion

Birds are classified basing on two features; beaks and feet

1. **BIRDS OF PREY (preying birds)**

These are birds that hunt and kill other animals for food.

**Characteristics of birds of prey.**

* They have strong, sharp hooked beaks for tearing their prey
* They have strong curved talons for easy gripping of their prey.
* They have a strong eye sight to locate their prey from a distance.

**Examples of birds of prey**

* Eagles, kites, hawks, owls, secretary birds
* **NB: Owls are nocturnal while the rest are diurnals.**

**BIRDS OF PREY**

This is an animal that is hunted, killed and eaten by another animal.

**Examples of prey**; chicks, frogs toads, small snakes,etc.

|  |  |
| --- | --- |
|  |  |
| Strong, sharp and hooked beak | curved talons for easy gripping of prey |

**Dangers of birds of prey to people**

They eat people’s chicks, rabbits.

1. **SCAVENGER BIRDS.**

* They are birds that feed on carrion(flesh left by other animals**“predators”**).

Animals that hunt, kill and eat other animals are called**predators**.

* Scavenger birds are useful in the environment because they keep the environment clean by eating flesh of dead animals which may rot or smell.

**Examples:** crows, vultures, marabou stork

**Examples of scavenger animals**

* Fox, hyenas

|  |  |
| --- | --- |
| http://www.natureali.org/images/birds/vultures/juvenile_TV_head.jpg | http://www.natureali.org/images/birds/vultures/foot.jpg |
| Strong, sharp and hooked beak | Long, sharp, curved talons which grip carrion. |

**Note**: Scavenger birds have beaks similar to those of birds of prey because they are also

Used to tear flesh.

**Learners’ Activity**

1. Read words about birds from the first page, set five questions and supply answers to the above questions.

**EXERCISE**

1. State any one example of a carnivorous bird.
2. State the way a Vulture bird differs from an eagle in the way they feed.
3. How useful are scavenger birds in our environment
4. Apart from birds, name any other example of scavenger animals
5. State the meaning of the term Prey.
6. **PERCHING BIRDS**

These are birds that perch/rest on branches of trees/electric wires.

They have one toe pointing backwards and three toes pointing forward.

**A perch** is a place where birds rest or stay.

**Groups of perching birds.**

‘These are **seed eater, fruit eaters, insect eaters and nectar suckers**.

**Seed eaters**: These have short conical beaks for easy splitting of seeds.

**Examples:** pigeons, dove, weaver birds, finches, and parrot.

A Parrot has two toes pointing forward and two toes pointing backwards

Its beak is short, hooked with a narrow gap between the mandibles

|  |  |
| --- | --- |
| **Footof a parrot.** | **Beak of a parrot** |
| parrot-foot-drawing.jpg | [Bird Beaks. African Grey Parrot](http://www.biology-resources.com/drawing-bird-curlew.html) |

**Insect eaters:** They have short narrow beaks for easy picking up of the insects from barks of trees.

**Examples:** robins, sparrows, swift, swallows.

**NB:** They also have the ability to catch their prey/insects on flight.

**Nectar suckers:** they have long slender beaks for easy sucking of nectar from flowers.

**Examples:**sun bird **and** humming bird.

|  |
| --- |
| **A beak of a sun bird.** |
| **https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcQm-SU4o0tgdE0DXK9r-jRD-KYlzdpdqIWNZZVn_DtBfTfedwcZDg** |

**Fruits eaters** (**foresters)**: They have long stout beaks for collecting fruits from trees.

* They help in seed dispersal.

**Example**:A horn bill.

1. **SCRATCHING BIRDS.**

* These are birds that scratch the surface of the earth to find their food.
* They get worms, small insects and seeds from soil.

**Characteristics of scratching birds.**

* They have strong feet with blunt talons.
* They have strong pointed beaks for picking up food from the ground.

**EXAMPLES:** chicken, turkeys, guinea fowls.

|  |  |
| --- | --- |
|  | pg 9 |
| Strong short pointed beak for picking up food | Strong feet with blunt talons for scratching. |

1. **Climbing birds**

* These are birds that have the ability to climb trees.
* They have two toes pointing forward and two pointing backwards this helps them to climb trees looking for seeds and insects.
* They have strong and pointed beaks for making holes in tree trunks and pick insects from cracks of stems and holes in the barks of trees.
* They commonly live in trees and run about on branches of trees.
* **Examples:** parrots and wood pecker.

|  |
| --- |
| **A foot of a climbing bird.** |
| parrot-foot-drawing.jpg |

**Learners’ Activity**

1. In groups of 10 pupils each, discuss the best ways of giving care to the birds kept at home.

2. Discuss the ways people affect the birds in the community.

**EXERCISE**

1. In a sentence explain the meaning of the term climbing birds
2. Identify any two characteristics of the climbing birds.
3. Give two ways in which perching birds are useful to a crop farmer.
4. Give at least one example of each of the following:
5. Seed eaters.
6. Insect eaters
7. Fruit eaters
8. Nectar suckers.
9. In one sentence explain how perching birds feed.
10. List the examples of scratching and climbing birds.
11. **SUBTOPIC: SWIMMING BIRDS.**

**New words**

**Web***: A large skin grown between toes of some birds*

**Duckling**: *A young duck*

These are birds that have the ability to swim.

**Examples:** swan, duck, goose, penguin, sea gull, pelican.

**Characteristics of swimming birds**

* They have a spoon shaped beak for easy sieving of food from mud/water.
* They have a layer of fats to keep them warm in water.
* They have glands that produce oil which repels off the water from entering the body.
* They feed on small fish, small frogs, tadpoles and water plants.
* They have webbed feet for paddling in water as they swim (the webs enable them to easily swim in water).

**All illustration showing the foot and a beak of a swimming bird.**

|  |  |
| --- | --- |
| img005 | img005 |
| A webbed foot for paddling in water | Spoon shaped beak for sieving food from water/mud. |

1. **WADING BIRDS.**

New words

**Wade**: *To walk with difficulty through shallow water.*

**Flightless:***Unable to fly*

These are birds that walk(wade) through water to find their food.

**To wade** is to walk through water.

**Characteristics of Wading birds.**

1. They have long beaks for easy piercingof small fish, frogs and worms from water for food.
2. They have long, thin legs with half webbed toes widely spread out to prevent them from sinking in water.

**Examples of wading birds.**

Ibis, heron, egret, crested crane, flamingoes, jacana, king fishers.

1. **FLIGHTLESS BIRDS.**

* These are birds which cannot fly.
* They have small and weak wings that cannot support the weight of their bodies.
* They have bone marrows making them unable to fly.

**Examples of flightless birds;**

Ostrich, kiwi, emu, penguin, cassowary

How birds are adapted to flight

1. Have hollow bones
2. Have streamlined bodies
3. Have flight feathers

**Learners’ Activity**

1. In groups of 5 pupils each group, list, name and write birds domestic birds and wild birds.

2. Discuss the ways people in wild life education centers give care to the wild birds.

**EXERCISE**

1. State any four ways in which birds are adapted to their mode of life.
2. In four sentences state the importance of birds to people.
3. State how birds can be dangerous in our environment.

**MAMMALS.**

These are warm blooded vertebrates whose skin is covered with hair and have mammary glands.

**Characteristics of mammals.**

1. They have mammary glands which produce breast milk.
2. They undergo internal fertilization.
3. They have well developed ear lobes to trap sound waves.
4. They have fur on their bodies.
5. They breathe through the lungs.
6. They have four chambered hearts.
7. They have back bones.
8. All mammals are warm blooded.

**ADAPTATION OF MAMMALS TO THE WEATHER CONDITIONS.**

1. Mammals have sweat glands that produce sweat on hot days.
2. Mammals like elephants, rhinos, hippopotamuses have thick skins to protect their bodies from injuries.
3. Mammals have fur that insulate their bodies.
4. Dogs regulate body temperature by panting using the tongue.

**Classification/groups of mammals.**

1. Primates(most advanced mammals)
2. Rodents (gnawing mammals)
3. Ungulates(hoofed mammals)
4. Chiropterans (flying mammals)
5. Marsupials(pouched mammals)
6. Insectivores (insect eating mammals)

**. PRIMATES (most advanced mammals)**

1. They are the most advanced group with a well-developed brain.
2. They have a well-developed set of teeth.
3. They have five fingers and five toes on each foot.
4. They use their limbs for holding things while hind limbs for walking.
5. All primates are omnivores(feed on both flesh and vegetables).

**Examples of primates includes:**

People, gorillas, chimpanzee, baboon, bush baby, monkey, apes, gibbon

**EGG –LAYING MAMMALS (MONOTREMES)**

* These are mammals which reproduce by laying eggs.
* They are the most primitive group of mammals because they have characteristics of

Reptiles, birds and mammals (having mammary glands, having scales and having a beak).

**Examples of monotremes:**

* Duck billed platypus
* spiny anteater(echidna)

**Learners’ Activity**

**1.** Read words and sentences about classification of mammals. List any two groups of mammals.

2. Whatare the distinct characteristics of mammals?

**Exercise**

1. Give any two examples of primates
2. State any two ways why monotremes are adapted for their life in water why primates differ from other mammals
3. Explain why monotremes are grouped under mammals.
4. In which way is a duck billed platypus different from other warm blooded mammals?
5. Give a reason why mammals are referred to as vertebrates.

**FLYING MAMMALS (CHIROPTERA)**

New Words

**Chiroptera:** *Mammals that have the ability to fly.*

**Nocturnal:** *Animals that are active at night*

* These are mammals that have the ability to fly.
* They have fold skin attached to the fore limbs which act as wings.

**Examples**: Bats

**Picture of a bat**

**Types of bats**

* Fruit eaters or foresters.
* Insect eaters.
* Blood suckers (vampires)

**Note:**

* Bats are nocturnal animals(they are more active at night).
* They have a poor eye sight.
* Bats use echoes to locate their food at night and dodge obstacles when flying.

**Importance of bats in the environment.**

* Fruit eating bats help in seed dispersal.
* Insect eating bats help to eat vectors that would spread diseases.
* They also pollinate flowers.

**Disadvantages of bats.**

* Vampire bats suck blood from animals which may lead to anemia and death.
* Droppings from bats lead to a bad smell in a living house.

**C. POUCHED MAMMALS (MARSUPIALS)**

* The term marsupial means a pouch or a bag.
* These are mammals with pockets (pouches) on their bodies.
* The pouches are used to carry their young ones for the first ten months.

**Examples of pouched mammals**.

Kangaroo, Koalabear, wallabies, opossums

**D. FLESH EATING MAMMALS(CARNIVORES)**

These are mammals with well-developed canine teeth used to tear flesh.

**Characteristics of fresh eating mammals.**

* They have sharp claws for holding, killing and tearing their prey.
* They have soft pads on the feet to enable them run after their prey without making noise.
* They have a good speed, sense of smell and vision even at night.

**Groups of carnivores include:**

1. **Cat family:** They have features similar to those of domestic cats.

**Examples:**lion, cheetah, leopard, tiger etc.

1. **Dog family:** They have features similar to those of domestic dogs.

Examples: dog, hyena, Jackals, Fox etc.

**Note:** Carnivores are also called **preying mammals** and they are **predators**.

**Learners’ Activity**

1. Critically look at your neighbor and observe the features found on his body.

a) Using the above identified features, state whether he/ she is a mammal.

b) State any two differences between your neighbor and a hen.

**EXERCISE**

1. State one way in which bats are adapted to their mode of feeding.
2. Give any one way in which scavengers are useful in the environment.
3. State one difference between a scavenger and a predator.
4. In one sentence state how bats are useful in controlling malaria.
5. How can vampire bats be dangerous to animals?

. **SEA MAMMALS (CETACEAN, MARINE MAMMALS)**

New words

**Gnaw:** *To chew food rapidly*

**Herbivore:** *An animal that feeds on vegetation only*

These are mammals which live in water of seas and oceans.

**Characteristics of sea mammals.**

* Their fore limbs are modified into flippers.
* They are stream lined to overcome viscosity friction when swimming.

**Examples of sea mammals.**

Whale, dolphins, porpoise, seals and dugongs.

* They have blubber (layer of fats) that preventsheat loss from the body and it stores food.
* Whales are the largest mammals. They are not a fish.

**F.GNAWING MAMMALS (RODENTS)**

The termgnaw means rapidly chewing food.

**Rodents**are mammals with well-developed incisor teeth used to chew food rapidly.

**Examples of rodents include:**

|  |  |  |  |
| --- | --- | --- | --- |
| * Rabbits | * Squirrels | * mice | * beavers |
| * rats | * porcupines | * moles |  |

**Characteristic of rodents.**

* They have well developed incisor teeth for biting and chewing food rapidly.
* They don’t have canine teeth.
* They are herbivores(they feed on vegetation)
* They make burrows in the soil for protection as well as their habitats.
* They have sharp strong claws for digging up root crops.

**Disadvantages of rodents to crop farmers.**

* They destroy farmer’s crops.
* Rats destroy stored harvested food in the granaries.

**Learners’ Exercise:**

1. Write one sentence to explain the meaning of the word gnawing mammal
2. Mention any two characteristics of rodents.
3. Give three ways in which rodents are a disadvantage to a crop farmer
4. State how rodents are adapted to their mode of feeding.

**G.UNGULATES (HOOFED MAMMALS)**

**New words**

**Cud:** *Food that some animals bring back from the stomach into the mouth to* chew *again.*

**Ruminant:** *Animals that chew cud*

These are mammals which have hooves on their toes.

**Groups of ungulates**

1. **Even toed ungulates**e.g.: cow, goats, sheep, deer, camels, etc.

2. **Odd toed ungulates**e.g.: elephants, horses, zebras, donkeys, etc.

**Characteristics of ungulates or hoofed mammals.**

1. They mainly feed on plant materials.
2. They are either even or odd toed.
3. Some ungulates are ruminants and they chew cud.
4. Ruminant ungulates have four chambered stomachs.
5. Some ungulates do not chew cud and they have one stomach.

**Structures of different toes of ungulates**

|  |  |  |  |
| --- | --- | --- | --- |
|  | HORSE | COW |  |
|  | [UngB](https://hrexach.files.wordpress.com/2014/08/ungb.gif) | [UngB](https://hrexach.files.wordpress.com/2014/08/ungb.gif) |  |

**RUMINANTS(polygastrics) –** are animals that chew cud and have four chambers of the stomach.

**I.e.** Rumen, reticulum, omasum and abomasum(true stomach)

**Cud** is the food an animal brings back from the stomach to chew it again. This is called rumination/ regurgitation.

**Examples:** goats, sheep,cows, camels, giraffes, antelopes, buffaloes, etc.

**Non ruminants (monogastrics) –** are animals with one stomach.

They do not chew cud

**Examples:** hippopotamus, pigs, rhino, donkeys, zebras and warthogs.

**.INSECTIVORES.**

* These are mammals that feed on insects.
* They have long and strong claws for digging the soil and anthills to get insects.

**Examples of insectivores**

* Hedgehog, Antbear, ant eater, pangolins, porcupine and Shrew.
* Ant eaters have long sticky tongues for trapping insects.

**How different mammals protect themselves:**

|  |  |
| --- | --- |
| **Animal** | **Protection** |
| Skunk | Producing a bad smell. |
| Porcupine | Uses its spines on its body. |
| Hedgehog | Uses its spines on its body. |
| Zebras | Running away / keep in a group. |
| Dog | Barking/biting. |
| Buffaloes | Goring using its horns. |

**ACTIVITY**

1. Draw the hooves possessed by the following mammals

a) Cow b) sheep c) dog d) elephant

**Learner’s Exercise:**

1. State any two characteristics of ungulates.
2. In one sentence explain the term ruminants.
3. How does a porcupine protect itself?
4. List any three examples of sea mammals.
5. Of what importance is a thick layer of blubber to a whale?

**REPTILES:**

* Reptiles are animals which move by crawling

The word reptile comes from reptalia meaning crawlers.

**Characteristics of reptiles.**

1. They are cold blooded (poikilothermic)
2. Reptiles breathe through their lungs.
3. They reproduce by laying eggs.
4. Their bodies are covered with scales.
5. Their hearts have three chambersi.e. two atria and one ventricle.
6. They undergo internal fertilization.

**Groups of reptiles.**

Snakes, lizards, tortoises, alligators, crocodiles, turtles.

**Snakes.**

* Snakes are limbless reptiles with no eyelids and move by gliding/slithering/crawling.
* They moult to grow a new skin and increase in size.
* They used their forked tongue to sense smell from other animals and tasting.
* Snakes move with their tongues out for protection.
* Snakes eat rats, frogs, lizards, etc.
* They swallow their prey whole since they have no teeth to chew food.
* Snakes use their skin for hearing

**Note**: Moulting is the shedding of animal skins to allow them to grow new skins and increase in size.

**Types of snakes.**

* Poisonous snakes.
* Non-poisonous snakes
* Constrictors.

**POISONOUS SNAKES.**

* These are snakes with poison glands and fangs.
* They have fangs used to inject venom from the poison glands into the victim’s body.
* Snake venom can be used to make serum/ant venom used to treat snake bites.

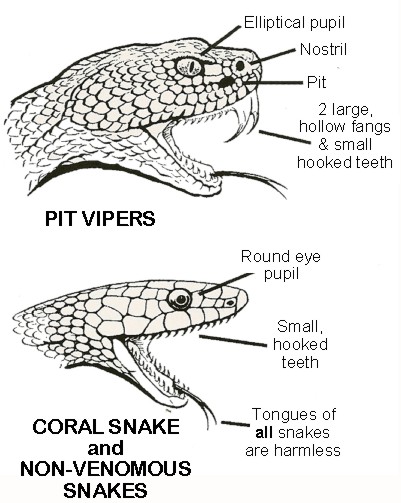
**Examples of poisonous snakes.**

Cobra, black mamba, puff udder, Gabon viper

**Effect of snake poison on blood.**

Venom clots blood

**Diagram show a head of a poisonous snake**



**Note:** Some snakes have the poison fangs situated at the back of the mouth while others near the mouth.

**First aid for snake bites.**

* Calm the casualty down.
* Identify the fang marks.
* Tie slightly above the bitten part.
* Take the casualty to the nearest health unit.

**NON-POISONOUS SNAKES.**

* These are snakes that do not produce venom.

**Examples;** Green snakes, brown house snake.

**Importance of snakes to people.**

* Non-poisonous snakes help to feed on pests like rats and mice.
* They eat vermin.

**CONSTRICTORS**

They are snakes with strong elastic muscles used to kill and crush their prey.

* They lick their prey making it slippery for easy swallowing.

**Examples:** pythons, anaconda, boa.

**Reproduction in snakes.**

* Some snakes lay eggs e.g.: cobras, mambas, adders
* Giving birth to live young ones e.g.: boas, green anacondas, Gabon vipers, rattle snakes.

**Learner’s activity.**

1. Read words about and reptiles and list any four examples reptiles without limbs

2. Discuss and list the similarities between birds and reptiles.

**EXERCISE**

1. How does a poisonous snake differ from non-poisonous snake
2. State any one characteristic of poisonous snakes.
3. Give two examples of poisonous snakes.
4. How does venom affect blood of a person bitten by a poisonous snake?
5. What first aid would you give to a P.2 boy who has been bitten by a poisonous snake?
6. Give any two characteristics of reptiles.
7. In a sentence, state what is meant by the term Moulting as used in reptiles.

**CROCODILES AND ALLIGATORS.**

**Alligator**

A large reptile of the crocodile family

* Crocodiles are the largest reptiles.
* They use their strong tails to swim and attack their prey.
* The females lay hard-shelled eggs in sand.
* Alligators and crocodiles have similar features.

**Tortoises and Turtles/Terrapins.**

Tortoises are complete enclosed in hard bony shells.

* They protect themselves by withdrawing /hiding in their hard shell.
* Turtles use flippers for swimming.
* Tortoises/terrapins and turtles use lungs for breathing.
* They reproduce by laying eggs in sand.

**Note:** Some tortoises eat plants while others eat small insects.

**LIZARDS**

Lizards have two pairs of limbs used for moving.

**Groups of lizards include:**

Common lizards, monitor lizards, geckoes and chameleons.

**Characteristics of lizards.**

* They use their forked tongues for trapping their prey.
* They use suction pads on their feet to walk upside down the ceilings in our houses.

**CHAMELEONS.**

* A chameleon has bulging eyes close to the top of its head to see in all at the same time.
* Chameleons feed on insects such as mosquitoes, house flies which they trap using their sticky forked tongue.
* Chameleons camouflage to protect themselves from enemies and easily trap their prey.

**Importance of reptiles.**

* Some reptiles are sources of food to some people.
* Snakes provide skins for making shoes, bags.
* Monitor lizards provide us with skins used to make long drums.
* Reptiles attract tourists who bring foreign income to our country.
* Reptiles eat harmful insects that would spread diseases.

**Learner’s activity**

1. Watching a video clip on Reptiles

**EXERCISE**

1. State any one example of reptiles.
2. Give any two importance of reptiles to people.
3. State any two characteristics of reptiles
4. How are crocodiles and alligators adapted to swimming?
5. In two sentences, state how a tortoise is adapted to its mode of life.
6. State how reptiles reproduce?

**AMPHIBIANS:**

New words

**Amphibious:** Able to live both on land and water

**Egg spawn:** A bunch of eggs laid together

* They are cold blooded vertebrates that live both on land and in water.
* Amphibians are adapted for early life on water and later life on land.

**Examples of amphibians.**

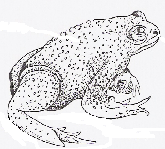
Toads, newts, frogs and salamander.

**Characteristics of amphibians.**

* They live both on land and in water.
* They are cold blooded animals (poikilothermic)
* They reproduce by laying eggs.
* They undergo external fertilization.
* They have webbed feet for easy swimming in water
* They have back bones(vertebrates).

**NB: -** The young ones of amphibians are called tadpoles.

- Newts and salamanders have tails compared to frog and toads.

**A structure showing external features of a toad.**

**Illustrations of the eggs of a toad and a frog.**

|  |  |
| --- | --- |
| Frog | **Toad** |
|  |  |
| Eggs in clusters | eggs in ribbons of spawn |

**Differences between a frog and a toad.**

* Frogs lay eggs in big masses (cluster) while toads lay eggs in ribbon like structures (spawn).
* Frogs breathe through their moist skin and the lungs while toads breathe through lungs only.
* Frogs have smooth moist skin while toads have rough warty skin.
* Frogs have no poison glands while toads have poison glands.

**RESPIRATION IN AMPHIBIANS.**

**What do Amphibians use for breathing?**

|  |  |  |
| --- | --- | --- |
| **Amphibian** | **a. On land** | **b. In water** |
| A frog | lungs | Moist skin/ mouth cavity |
| A toad | Lungs | Mouth cavity |
| Tadpole |  | The external gills |

* A frog keeps its skin moist by secretions from the mucus glands.
* Amphibians do not have diaphragms and ribs.

**Movement:**

* Frog move by leaping and toads move by crawling.

**Feeding:**

* Frogs and toads are carnivorous since they feed on worms, beetles, cockroaches, houseflies and other insects.
* They trapprey using their sticky tongues.
* Tadpoles are herbivorous and feed on plants in water.

Note:Toads and frogs hibernate (Aestivate, this is when the body activities like feeding are slowed down. It is done when the weather is harsh (dry weather)

**Adaptations of a frog to living in water.**

* Frogs have streamlined bodies to enable them swim easily.
* Frogs have fully webbed hind feet for easy swimming in water.
* Frogs close nostrils when in water to prevent water from entering into the body.

**Learner’s activity**

1. Look at the diagrams of a frog and a toad; state the difference between the skin of the two animals.

2. Draw the two animals and show the external parts.

**EXERCISE**

1. Name any one example of Amphibians.
2. How are the hind limbs of amphibians adapted for movement?
3. What type of fertilization does a frog undergo?
4. In three sentences, state how a frog is adapted to living in water.

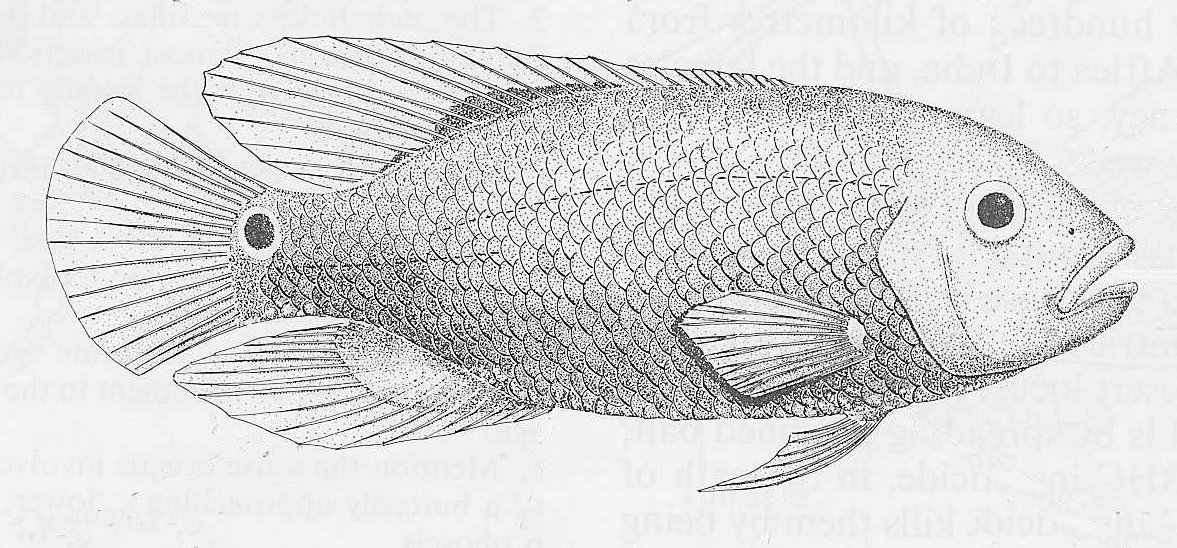
6. State any three differences between a frog and a toad.

**FISH.**

**Characteristics of fish.**

* They reproduce by laying eggs.
* They undergo external fertilization.
* They use their fins for swimming in water.
* They are cold blooded vertebrates.

**An illustration showing the parts of a fish**



**Functions of the parts.**

**Scales** – protects the internal parts of a fish from external damage.

**Gill cover/ operculum** – protect the gills from external damage.

**Nostril** – for smelling and tasting food.

**Tail fin/caudal fin** – For steering on swimming/ changing directions.

**Dorsal fin** – for protection against predators/defense.

**Pectoral and pelvic fins**- for slowing down/ stopping/ act as brakes during swimming.

**Mouth -**is a passage of food /passage of water with dissolved oxygen to the gills.

**Lateral line**- detects sound waves in water.

**Reproduction in fish.**

* Female fish lay eggs in shallow water and the male sheds sperms over themexternally.

Fish lay many eggs but fewer eggs develop because some eggs are wasted.

Most fish do not take care of their young one except the tilapia fish.

A young fish is called **fry.**

**Learners’exercise.**

1. What type of fertilization does a fish undergo?
2. How does a fish reproduce?
3. Give one way of conserving fish.
4. State any one use of fish to people.

**BREATHING OF THE FISH.**

* Fish breathe in dissolved oxygen using gills.
* Water with dissolved oxygenenters the body through the mouth.
* The mouth and throat force the water over the gills.
* The gills have a dense network of blood vessels for effective gaseous exchange.
* A fish has a number of gill filaments to increase the surface area for oxygen intake.

**Why does a fish die as soon as one removes it from the water?**

* The muscular system of the mouth and operculum which works in the water does not function in air / the valve system which is water tight is not air tight.
* The total surface area of the gills is reduced when the fish is removed from water.

**Adaptations of the fish to living in water.**

* They have gills used for breathing.
* They are stream lined to overcome viscosity friction when swimming in water.
* Some fish are slippery to easily escape from their enemies.
* A fish hasa lateral line used to detect sound waves in water.
* Fish have fins used for swimming in water.

**How is a swim bladder important to fish?**

* It prevents the fish from sinking.
* It keeps the fish buoyant.

**INVERTEBRATES/ NON – VERTEBRATES**

**New words**

**Arthropods.** *Invertebrates with jointed legs and segmented bodies*

* These are animals with no back bones or vertebral columns/spines.

They have got an exo-skeleton.

**GROUPS OF INVERTEBRATES /NON- VERTEBRATES**

|  |  |  |
| --- | --- | --- |
| * FCoelenterates | * Echinoderms | * worm |
| * mollusks | * sponges | * Arthropods |

**Coelenterates.**

* They are soft bodied animals with one body opening.

The opening works as both the mouth and Anus.

The opening is surrounded by stinging tentacles used for catching their prey.

They feed on small animals in water.

**Examples of coelenterates includes:**

Hydra, jerry fish, sea anemones, corals and Portuguese man of war

**Echinoderms.**

These are animals which live in seas.

**Examples:**star fish, sea urchin, brittle stars and sea cucumbers.

**SP[ONGES**

They live in fresh water and in colonies.

They breathe and feed through the holes on their bodies.

Food and oxygen are absorbed as water flows through the holes on the body.

**Learners’ activity.**

1. With the help of your parent, collect a lump of soil, put it in a container and pour some water. Observe.

a) State any two things seen in the container.

b) Mention any one living thing seen in the soil.

**EXERCISE**

1. Explain the term invertebrates in one sentence.
2. Identify any two groups of invertebrates.
3. Give two examples of each group of invertebrates in (2) above.
4. What characteristic is shared by all invertebrates?
5. How does a star fish obtain its food?

**: MOLLUSCS.**

These are soft bodied invertebrates with tentacles.

**Examples of mollusks.**

Oyster, octopus, cuttlefish, mussels, snails, slugs, squids.

Diagrams of mollusks

|  |  |
| --- | --- |
|  |  |
|  |  |

* The garden snail and slugs live on land.
* They have tentacles for detecting sound, smell, feel and suck food.
* Their eyes are found on the tentacles.
* Sea mollusks have gills for breathing while land mollusks use simple lungs.
* Snails protect themselves by hiding in the shells.
* They reproduce by laying eggs.

**Why does a sail or slug die when one pours salt on its body?**

The salt dehydrates the snail/ slug

**How important are mollusks to people?**

Some of them are eaten as food

**Dangers of mollusks to people.**

* Fresh water mollusks are vectors to people.

**WORMS**

* These are long, thin and soft bodied invertebrates.

They use their moist skins for breathing.

They have hydrostatic type of skeleton.

**Groups/types/Categories of worms**

* Segmented worm (annelids)
* Round worms (nematodes)
* Flat worms.

**Segmented worm**

These are worms with segments on their bodies.

**Examples:** earthworms bristle worms, leeches and lugworms.

**Diagrams of worms**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |

* Earth worms feed on plant materials and soil.
* Earthworms are hermaphrodites.I.e. have both female and male reproductive organs.
* They reproduce by laying eggs.
* They help in aerating the soil as they make channels in the soil.
* They also soften the soil.
* They make the soil fertile when they die and decompose.
* Earth worms come out of the soil when it has rained to breathe/to take in oxygen.

**Learners’ activity**

1. In groups of 5 pupils in your class, discuss the following:

a) Of what value are animals to people?

b) How are birds useful to people?

c) Of what advantage are house flies to people?

**EXERCISE**

1. What are segmented worms?

2. Give two examples of segmented worms.

3. Identify any other two groups of worms apart from segmented worms.

4. Why do earth worms come out of the soil when it has rained?

5. State the importance of earth worms to a farmer.

**FLAT WORMS**

* These are worms with flat bodies made up of three layers.

**Example of flat worms:** Tape worm and liver flukes.

**Where do flat worms live?**

a) Tape worms live in the small intestine

b) Liver flukes live in the liver.

**What do flat worms feed on?**

a) Tape worms feed on digested food.

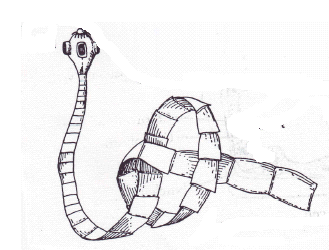
b)Liver flukes feed on blood.

**Effects of flat worms.**

a) Tape worms lead to deficiency diseases.

b)Liver flukes destroy the liver.

**Illustration of the tape worm.**

****

**PARTS OF A TAPE WORM.**

* **Hooks** -to attach themselves on the walls of the intestine.
* **Suckers-** for sucking digested food from the walls of the intestine.
* **Segments -** for storing the eggs.

Their bodies are covered with mucus to prevent themselves from hot substances.

**ROUND WORMS/ NEMATODES.**

* These are worms with cylindrical bodies and pointed ends.
* Some live in water and others in soil.

**Examples of round worms.**

* Hook worms, Pin worms, Guinea worms, Ascaris worms, Filarial worms, Eel wormsand Thread worms.

Diagrams of round worms

|  |  |
| --- | --- |
|  |  |
|  |  |

**How hook worms enter our body?**

* By penetrating through skins of our feet when we walk bare-footed in dirty places.
* They in the small intestine and blood.

**Dangers of hook worms to people**

They suck blood hence causing anaemia.

**WAYS OF PREVENTING HOOK WORM INFECTION**

* By wearing scandals/shoes when walking in dirty places such as latrines.
* By washing hands after visiting a latrine.
* By washing fruits before eating them in raw form.
* Through proper disposal of human wastes.

**Learners’exercise**

1. Outline the characteristics of round worms.
2. List any two examples of round worms.
3. Identify any one way by which hook worms enter intoour bodies.
4. State any one way in which worms are dangerous to people.
5. State any two ways of preventing hook worm infections.

**SINGLE-CELLED INVERTEBRATES/PROTOZOA/UNICELLULAR ORGANISMS**

* These are animals whose bodies are made up of one cell.
* They live in ponds, ditches, seas, lakes, rivers and inside bodies of other animals.
* They are too small to seen by our eyes unless one uses a microscope.

**Examples of Single celled Animals**

* Amoeba, Paramecium, Plasmodia, Chlamydia, Trypanosomes, Schistosomes, etc.

**Structures of an Amoeba.**

[](http://www.google.com/url?url=http://www.premiumgroupgames.com/amoeba.html&rct=j&frm=1&q=&esrc=s&sa=U&ei=osqzVMyAK6mu7Abi9YGQBw&ved=0CBwQ9QEwAw&usg=AFQjCNE2Gcj1kz8mQ9KO8jawQPQVlfPpdQ)

**Characteristics of an amoeba.**

* They live in water to protect themselves against drying up.
* They reproduce by cell-division.
* They feed by engulfing food particles.
* They move by means of pseudopodia (false legs).
* They are single-celled-unicellular in nature.

**Dangers of Protozoa.**

They protozoa cause diseases to people and other animals. Eg.

* Amoeba-amoebic dysentery.
* Plasmodia-malaria
* Chlamydia-trachoma.
* Trypanosomes- sleeping sickness to people and nagana to live stock.

**ARTHROPODS**

These are animals with jointed legs and segmented bodies.

**CHARACTERISTICS OF ARTHROPODS**

* They have segmented bodies.
* They have jointed legs.

**Groups of arthropods.**

Myriapods, arachnids, crustaceans, insects.

**NB: arthropods have exo –skeleton**

**They moult to grow and increase in size.**

**MYRIAPODS:**

Myriapods are arthrpopods with many jointed legs.

**Examples:** millipedes and centipedes.

They are either chilopoda or diplopoda

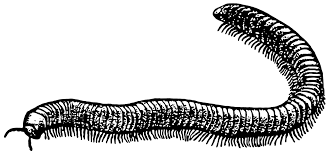
**Chilopoda** are arthropods with one pair of legs on each segment e.g.: centipede.

**Diplopods** are arthropods with two pairs of legs on each segmented: millipede.

**Diagram showing a centipede and millipede.**

**Millipede**

**Centipede**



A centipede is a carnivore (it feeds on insects and other small worms).

A centipede has poison glands which produce poison that is injected in its prey and used for protection.

* Millipedes are herbivores (they feed on vegetation).
* They make holes in soil hence helping in soil aeration.
* Millipedes protect themselves by coiling/curling.

**Similarities between centipedes and millipedes.**

* All are arthropods
* All have exoskeleton

**Differences between centipedes and millipedes.**

* A centipede is a carnivore while a millipede is a herbivore
* Millipedes have more legs than centipedes.
* A centipede protects itself by stinging while a millipede protects itself by coiling/curling.

**Learner’s exercise.**

1. What are arthropods?
2. Mention the different groups of arthropods.
3. List any two characteristics of arthropods.
4. In two sentences, state how a centipede is similar to a millipede.
5. How does a millipede protect itself from enemies?

**ARACHNIDS**

These are arthropods with four pairs of legs and two main body parts.

**Characteristics of arachnids.**

1. Have no antennae.
2. Have two main body parts (cephalothoraxesand abdomen).
3. Have four pairs of legs (eight legs).
4. They breathe through the lung books.
5. Have a simple eye and also compound eyes.

**Examples of arachnids**

Ticks, scorpions and spiders.

Diagrams

**Spiders**

* They use lung books for breathing.
* Their cobwebs are used as habitats and for trapping prey.
* Spiders are carnivorous, trap small insects and suck their fluids for food.
* The males also use the web to trap the females for mating.
* They reproduce by laying eggs.

**Reasons why spiders are not classified as insect.**

* They have two main body parts while insects have three main body parts.
* Spiders have four pairs of jointed legs (8 legs) while insects have three pairs of legs (6 legs).
* Spiders use lung books for breathing while insects use spiracles.

**Importance of spiders**

They eat insects like house flies, mosquitoes that would spread disease germs.

**Scorpion**

* A scorpion has a large tail with poison which it injects into its enemies after stinging them.
* A scorpion produces live young ones.

**Ticks**

They suck blood from animals and spread tick borne diseases to animals.

**Examples of tick borne disease**

East coast fever, red water, heart water, anaplasmosis.

They are all caused by protozoa spread by ticks to cattle.

**Learners’exercise.**

1. What are arachnids?
2. List any two characteristics of arachnids.
3. Give two reasons why spiders are not classified as insects
4. Give two examples of tick borne diseases.
5. In two sentences, state how a farmer can control the spread of tick borne diseases on a farm.

**LESSON 35:**

**SUB TOPIC: INSECTS**

These are arthropods with three main body parts and four pairs of legs.

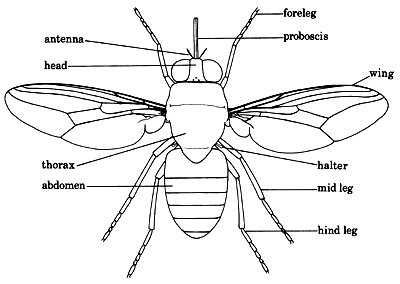
**Characteristics of insects.**

* They have three pairs of jointed legs.
* Insects breathe through spiracles.
* Have one pair of antennae/feelers.
* They have three main body parts.
* They have a pair of compound eyes.
* They have an exo-skeleton and they moult.

**Examples of insects:**

Houseflies, tsetse flies, dragon flies, mosquitoes, termites, butterflies, grasshoppers, cockroaches, moth, bees, etc.

**External parts of a housefly.**



**Function of the above parts.**

1. **Compound eyes:** used for vision or sight.
2. **Antennae/feelers:** for smelling/ feeling/ communication.
3. **Proboscis:** for sucking food or fluids.e.g.: mosquitoes, house fly
4. **Mandibles:** for chewing its food.E.g.: locusts, cockroaches, grass hoppers
5. **Wings:** for flying.
6. **Halteres:** for balancing in air while flying.
7. **Spiracles:** for gaseous exchange/breathing.

**Importance of the thorax to the insect**

* Provides attachment of wings, legs and halteres.

**Importance of the abdomen.**

It contains the spiracles.

It has the ovipositor.

**Importance of the head.**

It has the compound eyes used for seeing

It has the feelers used for feeling.

**Learner’s activity**

1. List four characteristics of insects.
2. In the space below, draw the life cycle of a house fly.
3. What name if given to the larva of a mosquito?
4. I) Metamorphosis ii) Moulting. iii) Incomplete metamorphosis

**REPRODUCTION IN INSECTS.**

* Most insects reproduce by laying eggs.
* Others reproduce by depositing/producing hatched larva like tsetse flies.

**Types of metamorphosis**

a) Complete metamorphosis/life cycle.

b) Incomplete metamorphosis/life cycle.

**Complete metamorphosis/complete life cycle**

This is the metamorphosis (complete life cycle) in which an insect undergoes four stages of development.

**Examples of insects that undergo complete life cycle.**

Houseflies, mosquitoes, bees, wasps, butterflies, moths, tsetse fly.

**STAGES OF A COMPLETE METAMORPHOSIS**

Eggs larva pupa adult.

**Note:** The larva stage is the most active stage while the pupa stage is the most dormant stage.

**What scientific name is given to the larva stage of the following insects?**

a) Housefly-maggots

b) Mosquito-wrigglers

c) Butterflies-caterpillar

d) Moth – maggot

e) Tsetse fly – maggot

f) Bee – grub.

**Metamorphosis of;**

|  |  |
| --- | --- |
| anopheles and mosquito | Culex mosquito /tiger mosquito. |
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**Incomplete metamorphosis.**

This is the life cycle in which insects undergo three stages of development.

**STAGES OF INCOMPLETE LIFE CYCLE**

Eggs nymph adult

**A diagram showing incomplete metamorphosis of a cockroach**

**Examples of insects which undergo incomplete metamorphosis**

Cockroaches, grasshoppers, locusts, cricket.

**Importance of insects.**

* Some insects are eaten as food.
* Some insects pollinate plants.
* Some bees provide us with honey.
* Some insects are sold to get honey.

**Dangers of insects**

* Some insects destroy crops.
* Some insects spread disease germs.

**CRUSTECEANS**

The term crustacean comes from the word crust. A crust is hard substance.

Crustaceans are arthropods with hard crusty skins

**CHARACTERISTICS OF CRUSTACEANS.**

* They have four pairs of legs.
* They breathe through the gills.
* They have two pairs of feelers.

**Examples of crustaceans**

* Crabs, lobsters, prawns, wood lice, barnacle, Cray fish, Cyclops, shrimps

**Importance of crustaceans.**

* Prawns and lobsters are eaten.

**Care and protection of vertebrates and invertebrates.**

* Treat the sick animals.
* Clean their habitats
* Conserve the natural habitats and species of animals.
* Provide feeds to the animals.
* Discourage poaching of wild life.

**ACTIVITY**

1. In groups discuss ways how you can care and protect animals in your surroundings.

2. Share your work with other groups and for marking.

**Exercise.**

1. List two examples of flat worms.
2. How do tape worms enter into our bodies?
3. State the dangers of having tape worms in our bodies.
4. Give any one way of avoiding tape worm infestation.
5. Draw and name parts of a tape worm (i.e. Segment, suckers, hooks, scolex).

**TOPIC: SOUND ENERGY**

* Sound is a form of energy produced by vibration of an object and stimulates the sense of hearing.
* Sound is regarded as a form of energy because it enables us to do work.

**What are the units for measuring sound?**

* Using the decibels.

**Types of sound.**

* Loud sound and soft sound
* High and low sound.

Noise is sound produced by irregular vibrations and is unpleasant to listen to.

Music is an organized sound produced by regular vibrations and pleasant to listen to.

**Sources of sound**

A source of sound is an object where sound waves originate from.

**Natural sources of sound**

These are materials that produce their own sound naturally

**Examples of natural sources of sound**

* A dog barking.
* Thunder.
* Birds singing.
* Human being talking.
* Wind blowing

**Artificial sources of sound.**

These are people made materials used to produce sound.

**Examples of artificial sources of sound**

* Guitar
* Drum
* flute
* tube fiddle
* Xylophones.

**How is sound produced?**

* By vibration of objects.

Vibration is the rapid to and fro movement of an object/is the up and down movement of an object rapidly.

**How living things produce sound.**

* Mammals - by vibration of their vocal cords.
* Birds - by vibration of the rings of cartilage in the trachea.
* Bees and mosquitoes­- by rapid flapping of their wings.
* Grasshoppers/crickets/ locust - by rubbing their hind legs against their wings.

**Learners’ Activity**

1. Under the guidance of your teacher, move around the school compound and listen carefully.

a) Do you hear anything?

b) Record the things that produce the sound.

**EXERCISE.**

1. In one sentence explain the term sound.
2. How is sound produced?
3. Give a different between noise and music.
4. How does the voice of a human being produce sound?

**LESSON 2.**

**MUSICAL INSTRUMENTS.**

Musical instruments are material used to produce sound.

**Importance of musical instruments**

* They are used to accompany or give a beat to the flow of music.

**Groups of musical instruments.**

Percussion instruments, wind instruments (aero phones), string instruments (chordophones)

1. **PERCUSSION MUSICAL INSTRUMENTS.**

These are musical instruments which produce sound by vibration after hitting them.

**Examples of percussion musical instruments.**

Xylophones, drums, long drum, bells, thumb pianos, brass band, drums, rattles, clappers/ strikers.

**Diagrams showing different examples of percussions.**

|  |  |  |  |
| --- | --- | --- | --- |
| A long drum | xylophone | A drum | bell |
| http://collections.ed.ac.uk/mimed/record/15754/1/0033835c.jpg | http://az58332.vo.msecnd.net/e88dd2e9fff747f090c792316c22131c/Images/Products56959-1200x1200-749286.jpg |  |  |

Pitch of a drum can be increased by heating their skin to tighten the skin.

**Learners’ Activity.**

1. Strike a drum using a stick and put your finger tips on top of the drum.

a) What do you feel?

b) State the term used to describe the movement of the surface of the drum.

**EXERCISE.**

1. Write one word to mean instruments that produce sound when hit
2. List two examples of such instruments.
3. How does a drum produce sound?
4. In which way is drum similar to xylophones
5. In the space below draw one example of a percussion instrument.

**LESSON 3.**

**WIND MUSICAL INSTRUMENTS (AEROPHONES).**

Musical instruments which produce sound by the vibration of air blown inside them.

**Examples of wind musical instruments.**

Flute, trumpet, pan pipes, empty bottles, horns etc.

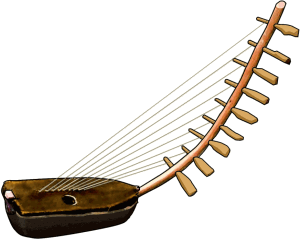
**LESSON 4: STRING INSTRUMENTS (CHORDOPHONES)**

Instruments that produce sound by vibration of the string when they are plucked/bowed.

**Examples of string musical instruments.**

Guitar, tube fiddle, lyre, a harp, violin.

**Diagram showing a structure of a bow harp/adungu.**

[](http://digitalstamp.suppa.jp/musical_instruments_a/adungu_play.html)

* Strings of a bow harp are of different lengths to produce different pitch of sound.
* From the instrument above, string A will produce low pitched sound while string D will produce high pitched sound when plucked.
* Hole on a bow harp is used to allow air out.

**How does sound travel**

* Through sound waves.
* Sound travels fastest in solids and slowest in gases.
* Sound doesn’t travel through a vacuum because it does not have molecules /air/matter
* The speed of sound in normal air is 330/sec.

**Factors affecting the speed of sound.**

* Wind - carries sound waves further to many directions.

- Italso obstructs the sound waves by blowing it in opposite directions.

* Temperature - On a hot day, sound waves move at a higher level than on cold days.
* Altitude - Sound waves move easily along a lower altitude than up a hilly or mountain.

**LESSON 6: TERMS USED IN SOUND**

**ECHOES:**

An echo is a reflected sound.

It is formed by obstruction of sound waves.

* Smooth hard surfaces produce the best echoes while soft surfaces absorb sound.

**Advantages of echoes:**

* Bats use echoes to trap prey at night.
* Bats use echoes to dodge obstacles at night.
* Pilots use echoes to dodge obstacles and avoid hitting tall buildings and hills.
* Sailors and sea men use echoes to determine the depth of the sea.

**Disadvantages of echoes.**

* Echoes make sound difficult to interpret.
* Echoes cause accidents and noise pollution.
* Echoes interfere with communication

**How are echoes reduced in cinema halls and theatres?**

* Covering the walls with thick curtains.
* Fixingporous materials such as soft boards on the walls of the theatres.
* Use soft materials to make ceilings in the theatres.
* Cover the walls with bamboo reeds.

**Frequency**

* Frequency is the number of vibrations produced per second.
* The units used to measure frequency are the hertz.

**Volume of sound.**

* Volume is the loudness or softness of sound.

**PITCH OF SOUND.**

* Pitch of is the highness or lowness of sound.
* The faster the body vibrates, the higher the frequency and pitch produced.

**Factors that affect pitch of sound.**

* Frequency.
* Nature of material used to make the instrument.
* Tension of vibrating object
* Size of the vibrating object/Length of the string.
* Surface area for vibration.
* The smaller the surface area for vibration, the higher the pitch produced.
* High frequency produces high pitched sound.
* When a string of a musical instrument is short, it will produce high pitched sound.

**An experiment showing pitch of sound.**

|  |  |  |
| --- | --- | --- |
| **Bell A** | **Bell B** | **Bell C** |
|  |  |  |

**Observation:**

**Bell A** produces sound of the highest pitch because it has the smallest space for rapid vibration.

**Bell C** produces the lowest pitched sound because it is biggest so it vibrates slowly.

**Experiment 2**

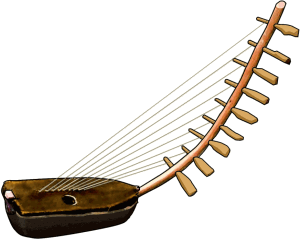
|  |  |  |
| --- | --- | --- |
| **Drum A** | **Drum B** | **Drum C** |
|  |  |  |

**Observation:**

**Drum A** produces sound of the highest pitch because it has the smallest space for rapid vibration / it is the smallest.

**Drum C** produces the lowest pitched sound because it is biggest so it vibrates slowly.

**Experiment 3**

[](http://digitalstamp.suppa.jp/musical_instruments_a/adungu_play.html)

* String A will produce low pitched sound because it is longest so it vibrates slowly.
* String D will produce high pitched sound when plucked because it is shortest so it vibrates rapidly.
* **Experiment 4**

|  |  |  |
| --- | --- | --- |
| **Bottle A** | **Bottle B** | **Bottle C** |
| [https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcRdJD60qUKBEAodMYLlz1kuTIAa9NVpP-Ae0ts5fcjexrDbgA3lf_5G-A](http://www.google.com/url?url=http://www.gettyimages.com/detail/photo/bottle-pipes-or-bottle-xylophone-three-high-res-stock-photography/479666129&rct=j&frm=1&q=&esrc=s&sa=U&ei=BLW0VN3hJszY7Ab7_4G4Dg&ved=0CCYQ9QEwCDg8&usg=AFQjCNEyQICT_XkgTpie_Zxf3-eRQzT2fg) | [https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcRdJD60qUKBEAodMYLlz1kuTIAa9NVpP-Ae0ts5fcjexrDbgA3lf_5G-A](http://www.google.com/url?url=http://www.gettyimages.com/detail/photo/bottle-pipes-or-bottle-xylophone-three-high-res-stock-photography/479666129&rct=j&frm=1&q=&esrc=s&sa=U&ei=BLW0VN3hJszY7Ab7_4G4Dg&ved=0CCYQ9QEwCDg8&usg=AFQjCNEyQICT_XkgTpie_Zxf3-eRQzT2fg) | [https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcRdJD60qUKBEAodMYLlz1kuTIAa9NVpP-Ae0ts5fcjexrDbgA3lf_5G-A](http://www.google.com/url?url=http://www.gettyimages.com/detail/photo/bottle-pipes-or-bottle-xylophone-three-high-res-stock-photography/479666129&rct=j&frm=1&q=&esrc=s&sa=U&ei=BLW0VN3hJszY7Ab7_4G4Dg&ved=0CCYQ9QEwCDg8&usg=AFQjCNEyQICT_XkgTpie_Zxf3-eRQzT2fg) |

* **Observation:**
* **Bottle A** produces sound of the highest pitch because it has the smallest space for rapid vibration.
* **Bottle C** produces the lowest pitched sound because it has biggest space so, it vibrates slowly.

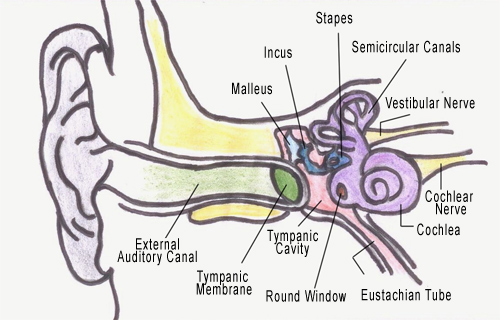
**LESSON: 8**

**Human ear.**

The ear is a sense organ used for hearing sound.

It is also used in balancing the body.

**STRUCTURE OF THE MAMMALIAN EAR.**



**Regions of the human ear.**

* The outer ear.
* The middle ear.
* The inner ear.

**Parts of the ear.**

**The outer ear(**made up of the pinna and auditory canal)

* **The pinna** - traps or collects sound waves and direct them to the auditory canal.
* **Auditory canal** – transports sound waves to the middle ear.
* **The outer ear**, has hair that traps dust and other foreign bodies that enter the ear.

**The middle ear**(made up of the ear drum, ossicles. i.e.mallets (hammer), incurs (anvil) and stapes (stirrup) and the Eustachian tube**).**

* The ear drum is made up of a thin soft membrane sensitive to sound waves.
* **The ear drum** vibrates and sends sound waves to the ossicles.
* **The ossicles** amplify sound and transmit the vibrations to the inner ear.
* **The Eustachian tube**balances air pressure on both sides of the ear drum.

**The inner ear. (**Madeof the cochlea, semi-circular canals and the auditory nerves)

* **The cochlea**- converts sound vibrations into nerve impulses.
* **The auditory nerve** - carries sound impulses to the brain for interpretation.
* **The semi-circular canals**- balances the body in a right posture.

**How we are able to hear.**

* The pinna collects sound waves and sends it to the middle ear through the auditory canal
* The ear drum vibrates and sends the sound waves to the ossicles which amplify the sound and send it to the inner ear.
* The cochlea change the sound waves into nerve impulses
* The auditory canal then transports the nerve impulses to the brain for interpretation.

Exercise.

1. Mention the function of the human ear.
2. Name any one component of the inner part of the ear.
3. How can you take good care of your ear?

**LESSON: 9**

**STORING AND REPRODUCING STORED SOUND**

**How sound is stored.**

* By recording it on sound devices
* By writing it in solfa/staff notation.

**Devices used in storing sound**

* Sound devices are materials used when recording and reproducing sound.
* We need to store sound for future use.

**Sound devices used to store sound.**

* Video Compact Discs/versatile compact Discs(VCDs)
* Magnetic Tapes.
* Digital Video Discs (DVDs)
* Computer Diskettes.
* Audio Compact Discs (CDs)
* MP3/mp4

**Devices used to reproduce the stored sound.**

* Cassette players
* CD players
* DVD players
* VCD players
* Computer monitors

**How stored sound can be reproduced**

* By replaying CDs in CD players.
* By replaying DVDs in DVD players.
* By replaying VCDs in VCD players.
* By replaying cassette tapes in cassette players

**LESSON: 10**

**DISEASES OF THE HUMAN EAR**

* Otitis media
* Boils in the ears.

NB: **ENT** **doctor** is a person who treats ear infections.

**DISORDERS OF THE HUMAN EAR.**

* Foreign body in the human ear. E.g. seeds/grain/soil/insects/chemicals.
* Deafness - inability to hear

**Causes of deafness**

* Can be through inheritance
* Damaging the ear drum after piercing it with a sharp object.
* Having a lot of wax in the ears.

**Types of deafness.**

1. **Partial deafness** - is the inability to hear clearly

It is corrected by removing the wax.

1. **Sensory deafness** - is the inability to differentiate between sounds

It is caused by old age infections and serious skull fracture.

It is corrected by good feeding to keep healthy even at old age.

1. **Permanent deafness**- A person is totally unable to hear any sounds.

It is common in damp people and cannot be corrected.

**Comparison of human ear with other animals**

|  |  |
| --- | --- |
| **Animal** | **Organ for hearing** |
| **Fish** | **Lateral line** |
| **Snake** | **Skin** |
| **Frog** | **Tympanum** |
| **Insects** | **Antennae** |

**Care for the human ear**

* Eating a balanced diet to keep healthy.
* Avoid staying near noisy places.
* Treat infections as soon as symptoms are sighted.
* Avoid pushing sharp/piercing object into the ear.
* Clean the ear daily with clean water and soap.

**ACTIVITY**

1. Wrap a cloth around one child’s face, position four children with different sources of sound in different directions. Let them sound the instruments at intervals.

a) Ask the child who has been blind folded to point the direction from which the sound is coming.

b) Discuss the process of hearing with your teacher.

**Learners’ EXERCISE**

1. Why is flute called a wind instrument?

2. Apart from aflute give any two other examples of wind musical instruments.

3. How would you change the pitch of sound in a bottle half filled with water?

(a) In order to produce a high pitch

(b) In order to produce a low pitch

4. In the space below draw and name any one wind musical instrument.

**THEME: THE HUMAN BODY**

**TOPIC: CIRCULATORY SYSTEM (Transport system of the body)**

**New words**

**A system:** *A group of organs that work together to perform a particular function.*

**Herat:** *A muscular blood pumping organ of the body*

A circulatory systemis a group of organs that work together to move blood to all body parts.

**Systems that make up the body.**

* Reproductive system
* Skeletal system
* Digestive system
* Respiratory system
* Nervous system
* Circulatory system
* excretory system

**Components of the circulatory system**

* The heart
* The blood
* Blood vessels

**Diagram showing the main blood circulation**

**The heart**

* It is an organ in the body that pumps blood to all body parts.
* It is enclosed in a membrane called pericardium.
* It has four chambers (two upper atriaor auricles and two lower chambers (ventricles).
* It is made up of cardiac muscles.
* It is protected by the ribcage.
* The normal person’s heart pumps 72 times per min.

**The structure of the human heart.**

**FUNCTIONS OF EACH PART OF THE HUMAN HEART.**

1. **Venacava** – transports deoxygenated blood from all parts of the body to the heart.
2. **Pulmonary artery –** transports deoxygenated blood from the heart to the lungs.
3. **Pulmonary vein –** transports oxygenated blood from the lungs to the heart.
4. **Aorta –** transports oxygenated blood from the heart to all body parts.
5. **Septum** - separates the left side of the heart from the right side.
6. **Valves –** they prevent blood from flowing back into the atria.

**Learners’ Activity**

1. Draw a table in your class work book with two columns under headings **arteries** and **veins**

Write at least five examples of arteries and veins in the body.

**EXERCISE**

1. Name the main organs of the circulatory system.

2. List the three blood vessels of the circulatory system.

3. Apart from the red blood cells mention any other two components of blood.

4. What is the function of valves in veins?

5. Identify any one disorder of the circulatory system.

**LESSON 2:**

**HOW THE HEART WORKS**

* Deoxygenated blood from all body parts enters the heart through the vena cava.
* It is then carried to the lungs through the pulmonary artery to drop carbon dioxide and receive oxygen.
* The pulmonary vein empties oxygenated blood from the lungs into the left atrium of the heart.
* As the left ventricle contracts, blood leave the heart through the aorta to all body parts.

**NB:**- The valves in the heart prevent blood from flowing back into the atria.

**- T**he septum separates the left side from the right side to avoid de-oxygenated blood from mixing with the oxygenated

- Doctors are able to listen to the flow of blood or heart beat using an instrument called

**Stethoscope**and **asphygmometer**for the blood pressure.

**Blood**

Blood is the red liquid that continuously flows in the body thru blood vessels.

**Types of blood**

* Oxygenated blood - It is bright red.
* De-oxygenated blood - It is dark red.

**Components of blood.**

* Platelets (thrombocytes)
* Plasma (fluid of blood)
* White blood cells (leucocytes)
* Red blood cells (erythrocytes)

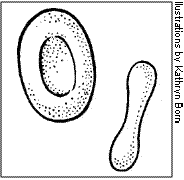
**Note**: An adult person has a capacity of 5 – 6 litres of blood in the body.

**Red blood cells.**

They are circular disc shaped.

* They are made in the red bone marrows of short bones.
* They appear red due to the existence of the haemoglobin.
* When haemoglobin combines with oxygen it forms oxy-haemoglobin which is bright red

**Diagram of a red blood cell**



**FUNCTION OF RED BLOOD CELLS.**

Helps to carry oxygen around the body.

**Note**: Plasmodia parasites attack the red blood cells causing malaria to the people.

**LESSON: 5**

**Blood plasma**

It is the liquid or watery part of blood.

**Components of plasma.**

* Blood proteins, digested food and mineral salts, water.

**Importance of plasma.**

* Blood plasma transports carbon dioxide from all body parts to the lungs.
* Blood plasma transports digested food to all parts of the body.
* Blood plasma also transports hormones from the glands to where they are needed.

**White blood cells. (Leucocytes)**

They are blood cells with a nucleus but with nohemoglobin.

The white blood cells have an irregular shape to enable them engulf the germs.



* They are made from lymph nodes the spleen and grey bone of long bones.
* They fight against diseases causing germs in the body

**How do the white blood cells defend the body against diseases?**

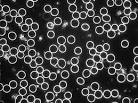
* By engulfing
* Producing more anti bodies.

Abnormal production of the white blood cells in the body leads to**leukemia.**

**Blood platelets (thrombocytes)**

* They are made in the red bone marrows.
* They clot blood.
* They have no nucleus.

**Diagrams showing blood platelets**

[](http://www.google.com/url?url=http://www.westonaprice.org/health-topics/how-does-pork-prepared-in-various-ways-affect-the-blood/&rct=j&frm=1&q=&esrc=s&sa=U&ei=3X62VPXIBsaZ7Ab8vYDwAg&ved=0CCoQ9QEwCg&usg=AFQjCNF8eFEn7DKL2oC1PFJ0V9M9FEKsJw)

**Note**: shortage of blood platelets results into uncontrolled bleeding in case of a wound.

**EXERCISE**

1. Name the two upper chambers of the heart
2. Which blood vessel carries blood from the body to the heart?
3. Which part of the heart pumps blood to the lungs?
4. Why is the left ventricle wall thicker than the right ventricle wall
5. Why does blood flow to the lungs before it is supplied to the rest of the body parts?

6. How useful are the following components of blood in the body?

a) Red blood cells.

b) Platelets

7. Identify a disease that attacks the following

a) Red blood cells

b) White blood cells

**LESSON: 6**

**BLOOD VESSELS**

They are muscular tubes that transport blood in the human body.

**Types of blood vessels.**

* Arteries
* VeinsIK
* Blood capillaries.

**ARTERIES.**

* Arteries are blood vessels that carry blood away from the heart.
* They have thick walls to withstand the pressure of the oxygenated blood.
* They have narrow blood passage (lumen).
* They lack valves.
* Blood in arteries flows at a high pressure.

**THESTRUCTURE OF AN ARTERY**

**Note:**All arteries carry oxygenated blood **except** pulmonary artery which carries deoxygenated blood from the heart to the lungs. The biggest artery is the **aorta**

**VEINS:**

* These are blood vessels that carry blood towards the heart.
* They have valves that prevent the back flow of blood.
* They have wider lumen.
* They have thin walls.
* Blood in veins flows at a low pressure.
* All veins carry deoxygenated blood **except** the pulmonary vein which carries oxygenated blood from the lungs to the heart. The biggest vein is the **venacava.**

**Structure showing a vein.**

**Differences between veins and arteries.**

**a) Structural differences.**

* Veins have wider lumens than arteries.
* Veins are thin walled while arteries are thick are thick walled.
* Veins have valves while arteries do not have valves.

**Functional differences**

* Veins carry blood towards the heart while arteries carry blood away from the heart.

**Capillaries.**

These are the smallest blood vessels that help to connect the veins to arteries.

Capillaries help to allow the exchange of blood materials.

**Structure showinga blood capillaries.**

**DISEASES OF THE CIRCULATORY SYSTEM**

**BLOOD DISEASES**

These are disease which commonly attacks the blood components. They include:

* Malaria
* Leukemia(blood cancer)
* Anaemia - caused due to lack of iron in one’s diet.
* Hemophilia
* Diabetes
* Sickle cell anaemia – makes the red blood cells appear like a new moon.

**AIDS(Acquired Immune deficiency Syndrome).**

It is caused by HIV (Human Immunodeficiency Virus)

It destroys the white blood cells and weakens the immune system making the body lack defense to infections.

* HIV does not kill the victim, it’s the secondary infections untreated that kill the victim.

**Ways through which HIV / AIDS is spread.**

* Having unprotected sex with an infected person.
* Sharing skin piercing objects with an infected person.
* Through transfusion of unscreened blood.
* Through some cultural practices such as circumcision.

**Effects of AIDS.**

**a) To an individual**

* AIDS weakens one’s immunity making the body prone to infections.
* AIDS leads to death of the victim.

**b) To a family**

* Leads to orphans.
* Leads to poverty in a home.

**C) To the community**

* Leads to lose of important people.
* AIDS increases the number of street children.

**Ways of controlling the spread of HIV and AIDS.**

* Having protected sex with trusted sex partners
* Avoid sharing skin piercing objects with an infected person
* Through transfusion of screened blood.
* Avoid sharing knives during cultural practices such as circumcision/tattooing.

**WAYS OF CARING TO AIDS VICTIMS**

* Encouraging them to promote personal hygiene
* Feed well
* Take their drugs in time.

**NB:** Tuberculosis victims are mistaken to be HIV victims due to the same signs and symptoms

**Diseases that attack the heart(Cardiac diseases).**

**Hypertension.**

It affects the walls of the arteries reducing the size of their lumen.

It is caused due to smoking.The poisonous drugs damage the cardiac muscles.

**Coronary artery disease**

**Learners’ Activity**

**1**. With your parent discuss the AIDS, its dangers to a P6 pupil.

b) Discuss the dangers of AIDS to the community and how to control it.

**EXERCISE**

1. Write three diseases of the circulatory system.

2. Identify one vector disease of the circulatory system

3. Mention one circulatory disease which affects white blood cells.

4. Mention one cause of heart diseases

5. Suggest one way of improving proper functioning of the circulatory system.

6. List two disorders of the circulatory system.

7. Suggest one way of increasing the volume of blood circulation in the body.

**LESSON 9:**

**Disorders of the circulatory system**

* Coronary thrombosis
* Cuts
* Heart burn
* Thrombosis

**Caring for the circulatory system.**

* Eating a balanced diet.
* Doing regular physical exercises
* Regular visits to hospital for medical check up
* Avoid eating too fatty/oil food stuffs.

**Ways of increasing volume of blood in circulation.**

* Eating a balanced diet.
* Eating foods mainly rich in iron e.g. greens, animal liver and kidneys
* Taking ferrous tablets with advice from a medical worker.

**Learners Activity**

1. Group the diseases and the disorders of the circulatory system into three groups. Those which are inherited from parents, those which are caused by virus and those that are caused by bacteria. Such more information from the internet.

**EXERCISE**

1. List two disorders of the circulatory system.

2. Give two ways one can care for the circulatory organs.

3. How can the volume of blood be increased in the body?

**ALCOHOL**

Alcohol is a chemical substance that makes people drunk once taken in excess.

**Types of alcohol.**

* Ethyl (ethanol) alcohol
* Methyl (methanol) alcohol

Fruits ripen due to **ethylene hormone.**

Methyl alcohol (methanol) is the most dangerous type of alcohol.

It can easily cause blindness in case of contact with the eyes.

**Examples of alcoholic drinks.**

‘Malwa’, ‘tonto’, muramba and beer.

**Reasons why people drink alcohol.**

* Due to excitement or happiness
* To celebrate their success
* To forget their problems
* To quench thirst
* To fit in their social groups.

**LESSON 2**

**METHODS OF RPODUCING ALCOHOL.**

* Fermentation method.
* Distillation method.

**Fermentation method.**

**Fermentation** is the process of turning plant sugars into alcohol by the help of yeast.

**Example of plant materials used to produce alcohol.**

* Ripe banana
* Cassava flour
* Maize flour
* Millet
* Sorghum

**Distillation method.**

* This is the obtaining of pure alcohol from fermented alcohol by evaporating and condensing of alcohol vapour.

**Processes involved in distillation method**

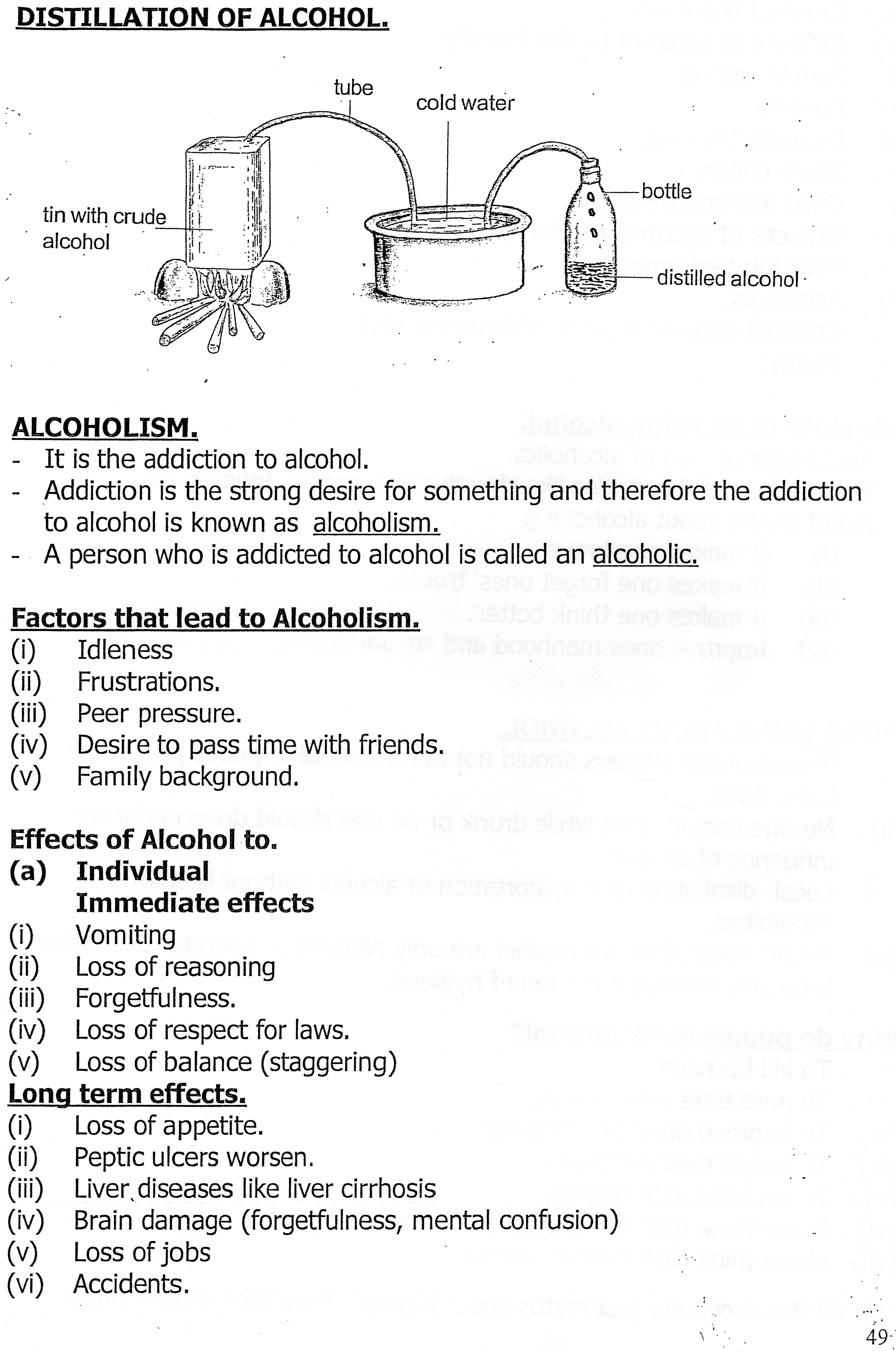
* Evaporation
* Condensation

**NB:** The liquid obtained using this method is called **a distillate.**

**Examples of alcoholic drinks obtained through this method**.

* waragi, enguli, Kasese, Liralira whisky, rum gin, vodka.

**Diagram showing distillation method of making alcohol.**



* Heat source provides the heat to cause evaporation.
* Cold water helps to condense the alcohol vapour.
* The delivery tube is coiled when it reaches the water for effective condensation of the alcohol vapour.

Note: Home distillation of alcohol is illegal due to the likely accidents that may occur.

**Learners’ activity.**

1. In groups of 10 pupils, discuss the steps followed when making alcohol using fermentation method.

2. Discuss the steps followed when making alcohol using distillation.

**EXERCISE**

1. In one sentence, explain each of the following terms:

a) Fermentation b) distillation

2. State the importance of each of the following

a) Cold water ii) heat source

3. In one sentence, give a reason why home distillation of alcohol is illegal.

4. Give any three examples of plant local materials used to produce fermented alcohol.

5. Define the term distillate

**Uses of alcohol in the society.**

* Methyl alcohol is used by doctors to sterilize medical instruments.
* Alcohol can be used in some thermometers.
* Alcohol is also used as a disinfectant on wounds.
* Alcohol can be used by builders to mix paints and dyes.

**Alcoholism.**

* This is a condition that results from the prolonged use of alcohol.
* Addiction to alcohol is a condition when one’s body cannot function well when he has not used alcohol.
* A person who is addicted to taking alcohol for his or her normal body functioning is called **an alcoholic.**

**Factors that may lead one to take alcohol**

* Stress
* Sad news
* Peer pressure
* Family background or life styles.
* Seductive advertisement.

**LESSON 4.**

**EFFECTS OF ALCOHOLISM.**

1. **Individuals.**

* It damages body organs such as, liver, brain and stomach.
* Leads to self-neglect.
* Leads to loss of appetite for food resulting into stomach ulcers.
* Leads to poverty since most of the money is spent on buying alcohol.

1. **To the family.**

* Leads to family poverty.
* Leads to family neglect.
* Leads to spouse abuse.
* Leads to child abuse.
* Loss of family respect
* Leads to broken homes.
* Causes immorality in children as the copy from their parents.

**c) To the community.**

* Leads to road accidents.
* Leads to increased crime rates in the community.
* Leads to poor job performance.

Life Skills that can protect one from alcoholism

1. Assertiveness
2. Self-awareness
3. Decision making
4. Critical thinking

**Laws governing alcohol in Uganda.**

* Persons below 18yrs of age are not allowed to drink alcohol in public places.
* All public places dealing in alcohol should be licensed after fulfilling certain standards.
* Drivers are not allowed to drive under the influence of alcohol.
* All forms of home distillations, transportation and possession of alcohol is illegal.

**Learners’ activity.**

1. Under the guidance of your teacher, discuss the dangers of alcohol in a home using role play method.

**EXERCISE**

1. Explain the following terms:

a) Alcoholic b) alcoholism

2. Mention any three factors that may lead to alcoholism

3. State any two ways in which alcohol is important in the society.

4. State how alcohol affects:

I) an individual ii) the family iii) the community

5. State the law governing the use of alcohol in Uganda.

**SUBTOPIC: SMOKING**

This is the regular use of tobacco by a person.

**Dangerous substances found in Tobacco.**

* Nicotine –Causes high blood pressure.
* Tar– causes lung cancer

**Dangerous gas found in tobacco**

* carbon monoxide

**Ways people use tobacco.**

* Through the burning pipes.
* Through burning cigarettes.
* By sniffing tobacco powder.
* By chewing the leaves of tobacco.

**Types of smoking.**

* Active smoking.
* Passive smoking.

**Active smoking** is the act of inhaling tobacco smoke directly from a burning cigarette.

**Passive smoking** is the inhaling of air filled with tobacco smoke from an active smoker.

**Reasons why people smoke;**

* Some smoke to warm their bodies.
* Some smoke due to peer pressure.
* Some smoke to concentrate on their work.
* Some smoke to look sophisticated/important.

**LESSON: 6**

**EFFECTS OF SMOKING.**

**a) To an individual.**

* It leads to Lung cancer and emphysema.
* It worsens Tuberculosis, bronchitis and pneumonia.
* Leads to self-neglect.

**b) To pregnant mothers**

* Causes miscarriage/abortion.
* Causes pre mature birth
* It causes still births.
* Causes underweight births.

**c) To the community.**

* Smoking can easily result into fire out breaks in an area.
* Smoking causes air pollution.
* It creates bad practices among children in the area.

**d) To the family.**

* All family members become passive smokers.
* Young children copy bad habits from elders who smoke.
* It can also lead to loss of family income since much of the money used for smoking.

**How to avoid smoking.**

* Keeping busy during free time by involving in football, volleyball, and music to avoid thinking about smoking.
* Avoid joining peer groups of people who use tobacco and other drugs.
* Advise friends who smoke about the dangers of smoking.

**Learners’ activity.**

1. List down places in your class work book four places where you have been and forced to smoke.

2. Discuss those areas with your teacher as he/she writes them on the chalk board.

**EXERCISE**

1. Explain the term smoking.
2. Identify the different ways people use tobacco.
3. Differentiate between passive and active smoking.
4. Give any two reasons why people smoke.
5. State two ways in which smoking can be dangerous to pregnant mother and to the family.
6. Outline any two ways of controlling smoking.

**DRUGS:**

A drug is any chemical substance introduced in the body that affects the functioning of the body systems.

**Types of drugs.**

* Essential drugs.
* Narcotic drugs.

Narcotic drugs are drugs which cause addiction after a prolonged use.

**Examples of narcotic drugs**

Tobacco, alcohol, marijuana, opium etc.

**Essential drugs.**

These are drugs used by people to meet their common health problems.

**They are categorized into four groups.**

* Pain killers for reducing pain.
* Curative drugs –used to cure diseases.
* Preventive drugs commonly vaccines used to prevent diseases.
* Contraceptives mainly used in family planning.

**Qualities/characteristics of essential drugs.**

* They should be common and affordable.
* They cure diseases.
* They reduce signs and symptoms.
* They should have value for money.

**Ways drugs are introduced in the body.**

* By swallowing (tablets)
* By injections (injectable)
* By smearing (ointments)

**Learners’ activity**

1. In one sentence, explain the term drug
2. Identify the different types of drugs.
3. What are essential drugs?
4. In three sentences, explain the qualities of essential drugs.
5. State any two ways in which essential drugs are introduced in the body.

**LESSON 8.**

**SUBTOPIC: TYPES OF ESSENTIAL DRUGS.**

* Traditional drugs.
* Laboratory drugs.

**Traditional drugs** are drugs which have existed before the introduction of science and technology.

**Examples-blackjack cures wounds.**

‘bombo’ grass for cough etc.

‘enkejje’ for measles

Mululuza.

**Characteristics of traditional drugs.**

* They are used in their raw form mainly.
* Their side effect on human health is not known.
* Their purity and quality changes.
* They are commonly not packed and sealed.

**Laboratory manufactured drugs.**

These are drugs which are made from laboratory.

**Examples include:**

Cough mixtures, chloroquine, paracetamol, pilton, ORS for rehydration, capsules etc.

**Characteristics of laboratory manufactured drugs.**

* They are well packed and scaled to prevent easy contamination.
* Have expiry dates.
* Are the same for every quantity made they have labels, names and what they cure.
* Their stability and strengthen are known.
* They have same purity and quality.

**Learners’ activity.**

1. State the difference between traditional drugs and laboratory drugs.
2. Give two examples of traditional drugs.
3. Outline any two characteristics of traditional drugs.
4. List any three characteristics of traditional drugs.
5. List any three characteristics of laboratory manufactured drugs.
6. Give any two examples of laboratory drugs.

**DRUG PRESCRIPTION**

This is the written information given by a health worker on how to use a certain drug.

**Considerations before prescribing a drug**

* The age of the patient
* weight of the patient
* sex or gender
* Duration or length of illness.

**Examples of drug prescriptions.**

* Name of the drug the disease it cures
* Time of taking the drug, the dosage.

**Importance of drug prescription.**

* It prevents people from taking under or over dose.
* It helps the patient to avoid drug misuse.

**Under dosage;** is when one takes less than the recommended quantity of drugs.

**DRUG MISUSE**

It is the use a drug in a wrong way.

**Ways of misusing drugs**

* Sharing drugs prescribed for one patient.
* Taking an under dose
* Taking an over dose.
* Taking a drug when you are not sick.
* Taking a drug at a wrong time.

**Effects of Drug misuse.**

1. Makes the patient take under dosage.
2. Makes germs resistant to the drug. This delays recovery.

**Dangers of buying drugs from shops or markets.**

* Drugs may be expired.
* Such drugs are not well prescribed and stored.
* Drugs may be contaminated.
* They may be spoilt/damaged.
* They may be fake drugs.

**Learners’ activity.**

1. Explain the following terms:i) Drug prescription ii) drug misuse
2. Give two reasons why health workers should give drug prescription to their patients.
3. State any two dangers of buying drugs from shops.
4. State any two ways in which people misuse drugs today.

**LESSON 10:**

**DRUG STORAGE**

* Drugs need to be kept in a clean cool dry place to prevent them from contamination.
* Cold chains are used to keep vaccines safe in areas where there is no electricity.
* Drugs should also be kept far from children to prevent child poisoning at home.

**Dangers of poor storage of drugs.**

* Drugs may easily become contaminated
* It makes drugs lose their curative value.
* Poorly stored drugs instead become poisonous to one’s health.
* Keeping drugs in children’s reach can easily cause child poisoning in homes.

**Drug abuse:**

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

**Reasons why people abuse drugs.**

* To improve on sexual performance.
* To concentrate on work.
* To feel warm.

**Commonly smoked abused drugs.**

* Njaga, marijuana, Bhang.
* Opium.
* Cocaine.

**Effects of drug abuse.**

* It damages body organs such as the brain, liver pancreas etc.
* Drugs abuse can cause abnormalities or improper body function.
* Drug abuse can easily result into death.
* It leads to divorce/spouse/child abuse.

**Note:**

**DRUGS OF DEPENDENCY**are drugs which cause addiction in case of prolonged use.

Drug dependency is when one’s body becomes addicted to a certain drug.

**Life styles to safe guard against drug dependency.**

* Keeping busy with sports and games in free time.
* Avoid peer groups which exercise the use of common drugs.
* Engage in good social clubs.

**Life skills to safe guard against drug dependency.**

* Self-esteem.
* Correct decision making.
* Assertiveness
* Critical thinking.

**Learners’ activity.**

1. In groups of 10 people, discuss and state reasons why people chose to take part in smoking.

2. Discuss and give reasons why some people chose not to take part in smoking.

3. Discuss the advantages of not taking part in smoking.

**EXERCISE**

1. What is drug abuse?
2. Why do people abuse drugs?
3. Give any two effects of drug abuse to an individual.
4. Explain what is meant by the term drug dependency.
5. State any two life skills of safe guarding against drug dependency.

THE END