LEGIT EDUCATION CONSULTANT

P.6 SCIENCE

LESSON NOTES AND ACTIVITIES

TERM 1

ISSUE ONE

NAME:----------

DAY ONE

CLASSIFICATION OF LIVING THINGS

- ✓ Living things are things which have got life.
  Or
- ✓ Living things are things which carry out life processes e.g. respiration, excretion and respiration.
- ✓ Living things are also called animates.
- ✓ Non living things are also called inanimate

Characteristics of living things

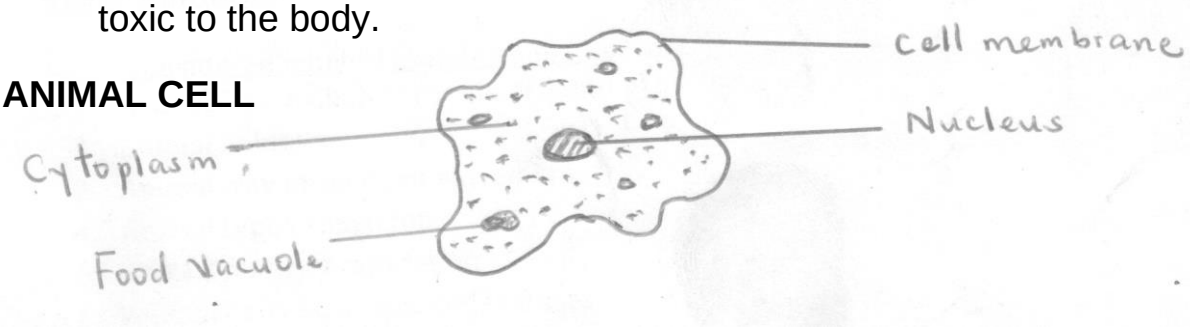
1. They reproduce
2. hey grow
3. They respire
4. They excrete
5. They move (locomote)
6. They have cells
7. They respond to stimuli (They are sensitive)
8. They feed

A cell is a smallest functional unit of a living organism.

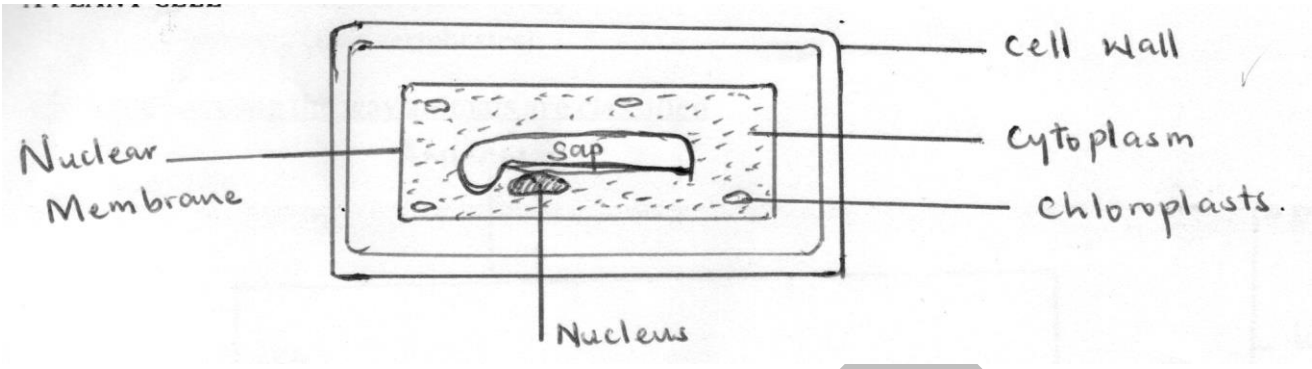
NB: Living things reproduce in order to multiply or increase in number.

- Respiration is the process by which food is broken down in the body cells to release energy.
- Respiration enables living organisms to get energy and also excrete carbondioxide and water vapour.
- Excretion is the process by which the waste products of metabolism are removed from the body.
- Excretion enables living things to get rid of waste products before they become toxic to the body.

ANIMAL CELL



A PLANT CELL



Respiration is the body cell occurs in an area called Mitochondria.

<u>Differences between the plants and animals.</u>

	Plants	Animals
1	They have chlorophyll	They lack chlorophyll
2	They make their own food (They feed autotrophically)	They can't make their own food. (They feed holozoically)
3	They have slow response to stimuli	They have quick response to stimuli
4	Growth only occurs on the tips of the roots and shoots	Growth occurs in all parts of the animals' body
5	They lack sense organs	They have sense organs
6	Their cells have cell walls Their cells have chloroplasts	Their cells don't have cell walls Their cells don't have chloroplasts

KINGDOMS OF LIVING THINGS

1. Animal kingdom
2. Plant kingdom
3. bacteria kingdom (Monera kingdom)
4. Fungi kingdom
5. Protoctista kingdom (single called organisms)

NB: A kingdom is the highest rank in the classification of living things.

ANIMAL KINGDOM

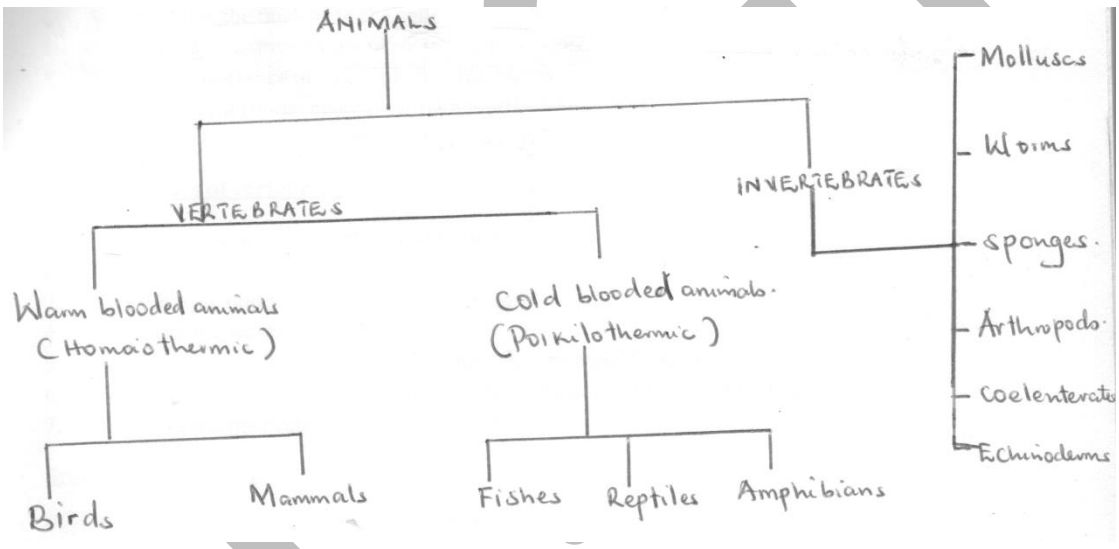
Factors considered when classifying animals

1. Animal feeding habits (mode of feeding)
2. Animal habitats
3. Animal way or mode of movement
4. Animal type of skeleton
5. Animal mode of reparation
6. Animal body structure and features

Animals are classified into two main groups namely:

1. Vertebrates (craniates/chordates)
2. Invertebrates (non-vertebrates)

The table showing the way animals are classified



NB: Classification is an act of grouping things basing on their common characteristics and features.

Vertebrates

Vertebrates are animals with a back bone (vertebral column)

Invertebrates are animals without a back bone.

Examples of vertebrates

man, pig, goat, monkey, snake, fish, frog, bat, etc

Examples of invertebrates

tsetsefly, mosquitoes, snails, octopus, Earth worm, spider, scorpions, slugs, oysters, jelly fish

Activity

1. Give two reasons why animals move from one place to another.
   i) _____
   ii) _____
2. Why is reproduction important to living things?
   _____
3. Which type of feeding is characterized by animals?
   _____
4. How are animals different from plants in terms of feeding?
   _____
   _____
5. State any two differences between vertebrates and invertebrates.
   i) _____
   ii) _____
6. How is the reproduction of bacteria different from that of mushrooms?
   _____
   _____
7. What are single celled organisms?
   _____
   _____
8. Give two examples of unicellular organisms.
   i) _____

ii) _____

9. How useful is the nuclear to the cell?

_____

_____

10. Where does respiration take place in the organism?

_____

11. State the importance of chlorophyll to the plants.

_____

12. Why can't mushrooms make their own food?

_____

_____

13. Which type of nutrition do most fungi undergo?

_____

_____

Characteristics of vertebrates

1. They have a back bone (vertebral column)
2. They mostly have an endo skeleton
3. They have an alimentary canal
4. They have the water proof skins
5. They have blood coloured red and pumped by the heart to all body parts
6. They have two pairs of limbs or fins foe locomotion apart from the snakes.
7. They have a large brain protected by the skull

Groups of vertebrates

Vertebrates are grouped into two main categories i.e

i) Homoeothermic animals (warm blooded animals)
ii) Poikilothermic animals (cold blooded animals)

Warm blooded animals

These are animals with a constant body temperature.

Groups of warm blooded animals

1. Mammals
2. Birds

Cold blooded vertebrates:

These are animals whose body temperature changes or varies according to the temperature in their environment.

Such animals their body temperatures are not constant.

Groups of cold blooded animals

1. Fish
2. Reptiles
3. Amphibians

Therefore there are five groups of vertebrates namely:

Mammals, Birds, Fish, Amphibians, Reptiles

FISH

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

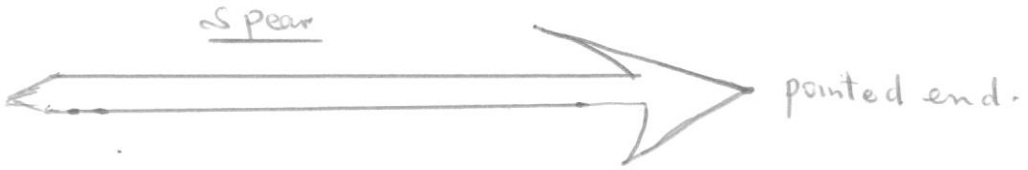
Characteristics of fish

1. They are cold blooded
2. They respire by means of gills
3. Most of them scaled slippery bodies
4. They reproduce by laying eggs (oviparous)
5. They have streamlined body shape which help them to reduce viscosity friction during swimming
6. They have fins for swimming and protection
7. They undergo external fertilization
8. They have the lateral line for detecting movements in water
9. They have nostrils for smelling in water
10. The fish only lives in water (it is aquatic animal)
11. Fish has got two chambered heart

A streamlined body is the body shape with the pointed ends

Examples of objects with streamlined shape

1. fish
2. areoplanes
3. boat
4. crocodiles
5. birds
6. spear
7. whale
8. dolphins



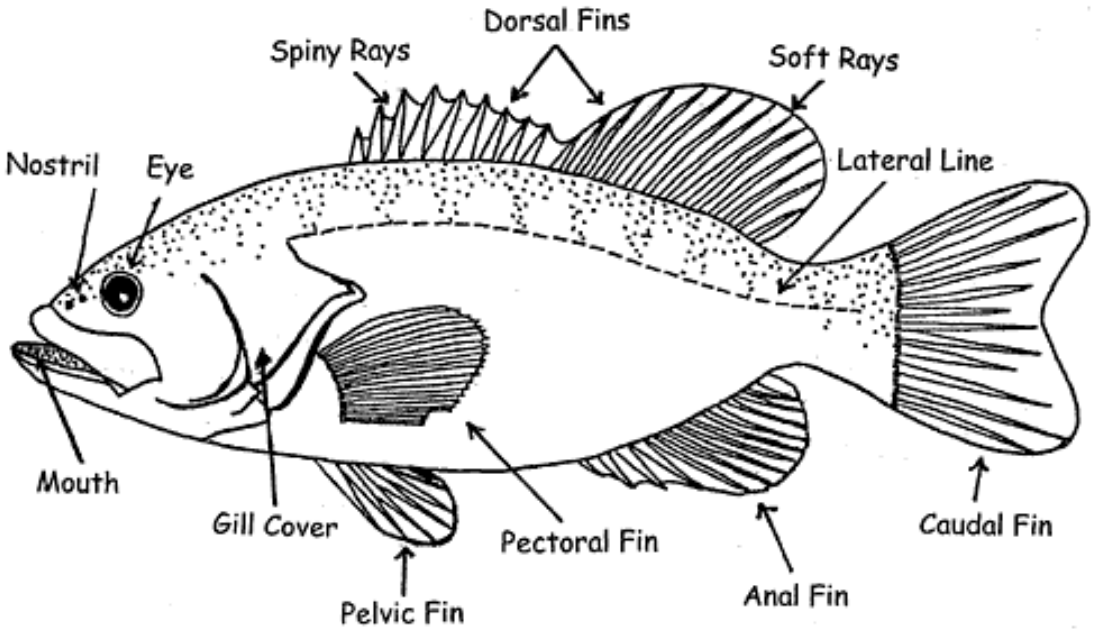
A streamlined body shape enables the fish to reduce the viscosity friction during swimming in water.

Viscosity friction: is the force that opposes motion in gases and liquids.

A fish can only use gills to trap the dissolved oxygen for breathing in water and when it is removed from water it dies after sometime.

On land the fish lack oxygen to be used by the gills for breathing.

External parts of the fish.



Functions of each part of the fish.

1. Nostrils: They are used by fish for smelling food substances in water.
2. Eyes: They enable the fish to see while in water.
3. Paired fins: These include the pectoral fins and pelvic fins
   - ✓ Pectoral fins and pelvic fin are used by the fins to slow down or to brake during swimming.
   - ✓ They also prevent the fish from rolling in water during swimming.
   - ✓ Pectoral fin and pelvic fin also enable the fish to swim upwards and down wards.
4. Median fin (Dorsal fin and ventral fin)
   They enable the fish to balance in water during swimming.
   Dorsal fin is also used by the fish for protection by piercing the enemies.
5. Candal fin: It is used by the fish to swim forward and change direction during swimming.
6. Lateral line: It is used by the fish to detect enemies in water by picking the movements using water waves.
7. Gills: They are used by the fish for breathing by absorbing the oxygen dissolved in water.
8. Gill cover (operculum): They cover and protect the fish's gills from physical damage.
9. Scales: They cover and protect the fish's body against injuries or scratches.
10. Mouth: It lets in food.
    - It lets in water containing oxygen that is trapped by gills during breathing.
11. Swim bladder: It is an air filled space in some fish which enables the fish to stay buoyant in water. It controls the depth at which the fish is swimming.

Activity

1. How does the fish respire?

   _____

2. Which type of fertilization does the fish undergo?

   _____

3. In which way are feelers similar to the lateral line of the fish?

   _____

   _____

4. What are oviparous animals?

_____

_____

5. How is the fish's body protected from damage?

_____

_____

6. Why does the fish die shortly after being removed from water?

_____

_____

7. State the importance of the swim bladder to the tilapia fish.

_____

_____

8. How are fins useful to the fish?

_____

9. Which food value is mainly obtained from eating the fish?

_____

10. How does external fertilization occur in the fish?

_____

_____

11. Why is the fish's body streamlines useful to the fish during swimming?

_____

_____

12. In which way are nostrils useful to the fish in water?

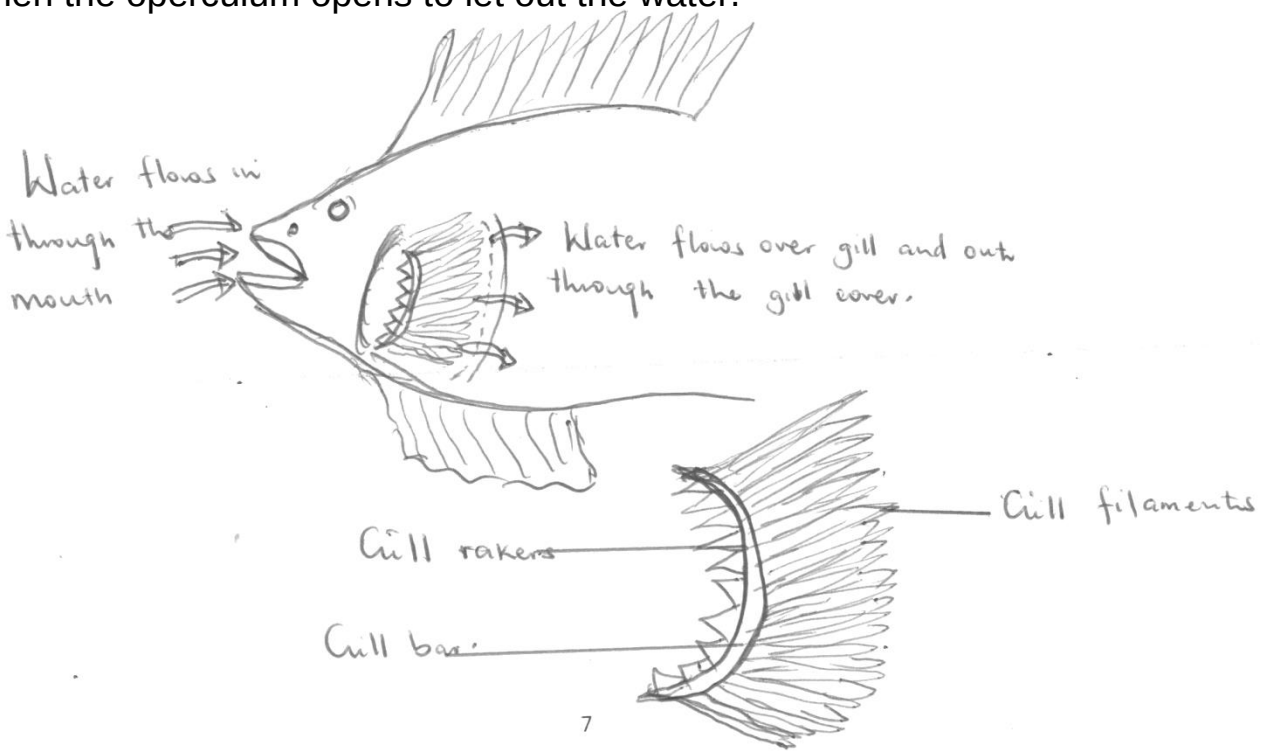
_____

_____

13. Identify the force that retards the fish's speed of swimming in water.

RESPIRATORY SYSTEM OF THE FISH

- The fish respires by means of gills
- The mouth lets in water with dissolved oxygen which is trapped by the gill filaments. Then the operculum opens to let out the water.



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Functions of each part

1. **Gill rakers:** They trap sold materials swallowed with water to prevent damage of the gill filaments.
2. **Gill bar:** It gives the attachment for the gill filaments and gill rakers.
3. **Gill filaments:** It is where gaseous exchange occurs

NB: The gills are adapted to gaseous exchange because they have got very many gill filaments which increase the surface area for gaseous exchange.
The fish dies shortly after being removed from water because it can only use gills to trap the dissolved oxygen in water.

FEEDING IN FISH

- Most fish are vegetarians, therefore they feed on algae and other water plants (planktons)
- Some fish are carnivorous i.e they feed on other water animals like small fish, insects, worms and frogs.
  After feeding, the food goes through the alimentary canal to the stomach where the enzymes act on it.

REPRODUCTION IN FISH

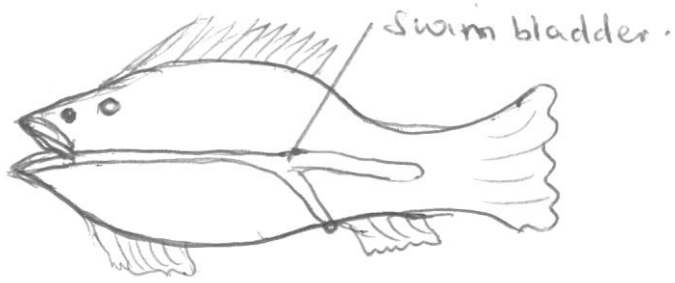
- The fish reproduce by laying eggs.
- The female fish lays eggs in water and the male one sheds sperms on them and the eggs become fertilized externally. Therefore, the fish undergoes external fertilization.
- The young fish is called Alevin.
- The group of young fish is called fry or fingerling

TYPES OF FISH

1. Bony fish
2. Cartilaginous fish
3. Lung fish

BONY FISH

- ✓ Their bodies are covered with overlapping scales.
- ✓ Their gills are covered with gill cover.
- ✓ They have the swim bladder in order to keep them buoyant in water



Examples of bony fish

1. Tilapia fish
2. Herrings
3. Nile perch
4. Pike
5. Trout
6. Salmon fish

CARTILAGINOUS FISH

- ✓ They have tough and spiny scales
- ✓ They do not have gill cover but instead they have gill slits on the surface of their bodies.
- ✓ They don't have true bones i.e their skeleton is soft or cartilaginous
- ✓ They have eyelids
- ✓ They don't have the swim bladder

Examples of cartilaginous fish

1. Dog fish
2. Skates
3. Rays

LUNG FISH

- ✓ They have swim bladder and gill covers.
- ✓ They live in dirty pools and swamps.
- ✓ They have long thin pectoral and pelvic fins
- ✓ They hibernate in dry season

HIBERNATION

This is the tendance of the animals staying inactive due to the changes in the temperatures of the surrounding.

Examples of lung fish

1. Common lung fish
2. Dipon

Ways how the fish protect themselves.

1. The fish's body is covered and protected from injuries by the scales.
2. The fish has got the lateral line which helps it to detect danger by detecting the movements of enemies in water.
3. The fish uses the dorsal fin to pierce its enemies and use other fins to swim and escape from the enemies.
4. Some fish have got electric organs which produce high voltage of electricity to shock their enemies.
5. Some fish inject poison in the enemies bodies.
6. A fish has got the slippery body which enable it to easily escape when caught by an enemy in water.
7. Some fish have got different shades of colours in order to hide from their enemies.

Adoptions of the fish to living in water successfully.

1. The fish's body is streamlined to enable it swim smoothly in water.
2. They fish has got fins for swimming and protection against enemies.
3. Some fin has got the swim bladder which help to keep the fish buoyant in water.
4. Fish has got the lateral line to detect danger in water.
5. The fish's body is covered and protected from injuries by scales.
6. The fish has got the slippery body that enable it easily escape from enemies.
7. The fish have got gills for breathing in the dissolved oxygen in water.

Importance or uses of fish to man

1. Fish is a source of proteins to man.
2. Fish is a source of bones used for making glue and poultry feeds that provide.
3. Fish is a source of income once it is sold.
4. Fish is a source of employment to man like fishermen.
5. It helps to control the breeding of mosquitoes by feeding on the mosquito larvae ponds.
6. Fish is used locally as medicine for measles.
7. Fish is the source of foreign exchange when it is exported.
8. Fish is used for decoration in aquarium at home and in offices.

Activity:

1. What is an aquarium?

   _____

   _____

2. How can fish introduced in the pond help to control mosquitoes at home?

   _____

   _____

3. State the economic importance of rearing fish.

   _____

   _____

4. In which way is algae useful in aquarium?

   _____

   _____

5. Why can't the fish stay alive on land?

_____

_____

6. In which way is fish rearing beneficial to the poultry project?

_____

_____

_____

7. What is hibernation?

_____

_____

8. In which way is the fish able to reduce the viscosity friction during swimming?

_____

_____

9. Identify any one disease controlled through eating fish.

_____

_____

10. State the importance of plankton to the fish.

_____

_____

11. Why is the fish included in the child's diet?

_____

_____

12. Point out one way the fish defends itself against enemies in water.

_____

_____

13. State one way the fish is adapted to swimming successfully in water.

_____

_____

14. Why does the fish die when its gills are removed or damaged?

_____

_____

15. The fish is said to be oviparous. Give the reason for this.

_____

_____

DAY TWO

REPTILES

Reptiles come from the Greek word Reptalia which means crawlers.

Qtn: What ate reptiles?

Reptiles are cold blooded vertebrates that moves by crawling.

Reptiles have 4 limbs apart from the snakes which are limbless.

Examples of Reptiles

1. Snakes
2. Crocodiles
3. Geckos
4. Tortoise
5. Chameleons
6. Lizards
7. Alligators
8. Turtles
9. Terrapins

Characteristics of reptiles

1. They are cold blooded (poikilothermic) animals.
2. They have scaled bodies
3. They respire by means of lungs
4. They undergo internal fertilization
5. They have the water proof skins
6. They have a three chambered heart i.e 2 auricles and one ventricle
7. Reptiles do not care after their young ones
8. Most reptiles reproduce by laying eggs which are hard shelled
9. They have external ears
10. They have teeth which is almost the same
11. Reptiles are four limbed apart from the snakes which are limbless

Groups of Reptiles

Reptiles are classifies into 4 groups, namely:

1. Lizards
2. crocodiles and alligators
3. Tortoise and turtles
4. Snakes

LIZARDS

Characteristics of Lizards

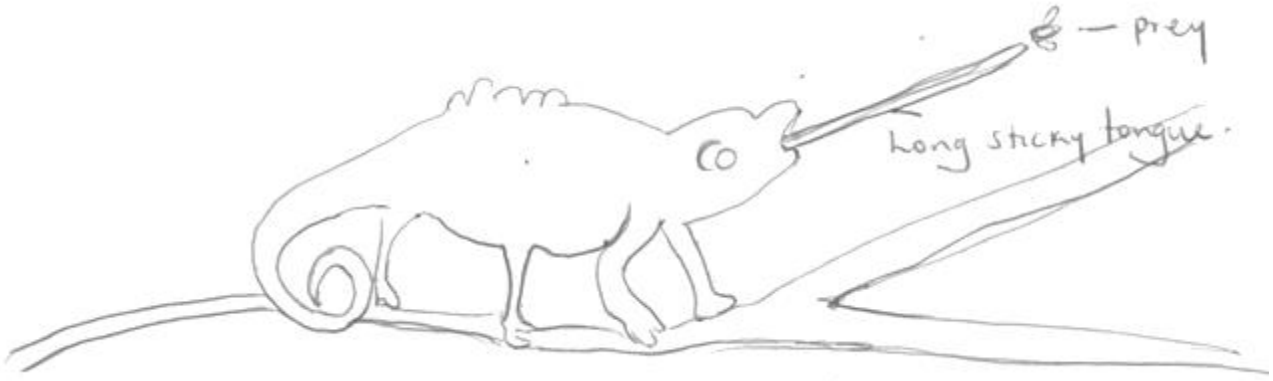
- ✓ They have 4 limbs
- ✓ They have 4 movable eyelids
- ✓ They have a fleshy tongue

Examples of lizards

1. Chameleons
2. Monitor lizards
3. Collared lizards
4. The six lined race runner
5. Common lizards
6. Geckos
7. Austrian frilled lizards
8. Monster lizard
9. Komado Dragon lizard

NB: All lizards are harmless apart from the monster lizard which have got the poison glands

Komado Dragon lizard is the biggest lizard in the whole world.



Chameleons camouflage or change their colours to resemble the surroundings because of the following reasons.

- To protect themselves from enemies
- To easily get their prey

A chameleon is able to trap its prey easily because it has a long sticky tongue.
Camouflaging in chameleons is an act of changing columns by chameleons to resemble the nearby surrounding.
NB:

- Geckos are yellow brown lizards that live in trees and houses. They have suction cups in their feet that enable them climb walls and trees.

CROCODILES AND ALLIGATORS

- These are the largest and most dangers reptiles.
- They are carnivorous i.e they feed on flesh of animals
- They have strong scaled backs
- They live on both land and in water depending on changes in atmospheric temperatures.
- They lay their eggs and they cover then in sand near water bodies and the eggs are hat ched by the help of the heat from the sun.
- They have long tails which they use for protection and swimming in water.

How crocodiles protect themselves.

1. By using their strong tails to hit their enemies.
2. By biting their enemies using their sharp jaws and teeth.

NB: Crocodiles open their mouth and expose their tongue and trap houseflies which land on it.

A crocodile

TURTLES AND TORTOISE

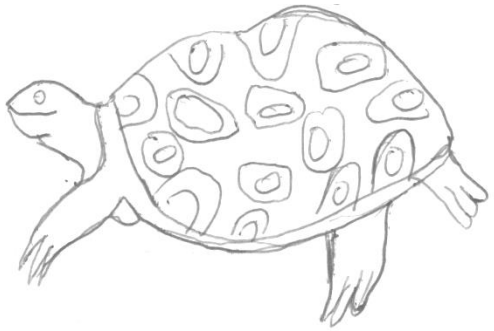
- They have hard shells on their bodies where they hide for protection.
- They always live in water but they always come on land to get food and also lay eggs
- Turtles have got webbed toes for swimming and peddling on water
- They lay eggs and hide them in sand which are hatched by heat from the sun
- They feed on small plants and small animals and insects

NB:

Turtles and tortoises protect themselves by hiding their legs and heads in their hard shells around their bodies.

Turtles' limbs are modifies into flippers for swimming unlike the tortoise.

A tortoise



Activity:

1. Why is a tortoise said to be a vertebrate?

   _____

   _____

2. State two differences between the reptiles and fish.

   _____

   _____

3. Outline two similarities between the fish and the reptiles.

   i) _____

   _____

   ii) _____

   _____

4. How is the fish different from the reptiles in terms of fertilization?

_____

_____

5. In which way are hard shells useful to the tortoise?

_____

_____

6. State one difference between turtles and the tortoise.

_____

_____

7. Why is camouflaging useful to chameleons?

_____

_____

8. How are Geckos and common lizards able to walk?

_____

_____

9. To which group of reptiles are chameleons classified?

_____

10. How do turtles and tortoise protect themselves?

_____

11. In which way do reptiles help to control the spread of some diseases to people?

_____

_____

12. State one importance of the tail to the crocodiles.

_____

_____

13. How does the crocodile protect itself from enemies?

_____

_____

14. How are the eggs laid by fish differ from those laid by the reptiles?

_____

_____

SNAKES

Snakes are limbless reptiles that move by gliding or slithering.

Gliding is the animal movement by concentration of body muscles.

Characteristics of snakes

1. They are limbless
2. They move by gliding or concentration of body muscles
3. They are able to sense danger by using the ear drum to detect sound waves on the ground.
4. They are mainly carnivorous
5. They always undergo moulting or ecdysis in order to increase in size
6. They have the forked tongue for smelling and tasting food
7. They have many ribs and vertebrae
8. They don't have eyelids
9. They have backward pointing teeth
10. They mostly protect themselves by biting their enemies

Types of snakes

There are three types if snakes

1. Poisonous snakes
2. Non-poisonous snakes
3. Constrictor snakes

NON-POISONOUS SNAKES

These are snakes which don't have poison gland and fangs

Characteristics of non-poisonous snakes

1. They don't have fangs
2. They have sold teeth which they use for biting but they don't produce venon
3. They eat rats, mice, frogs and other small snakes
4. They move faster
5. They kill their prey and swallow them as a whole
6. They don't have poison gland and can't produce venom

Examples of Non-poisonous snakes

1. Green grass snakes
2. Egg eating snakes
3. House snakes
4. Tree snakes

POISONOUS SNAKES

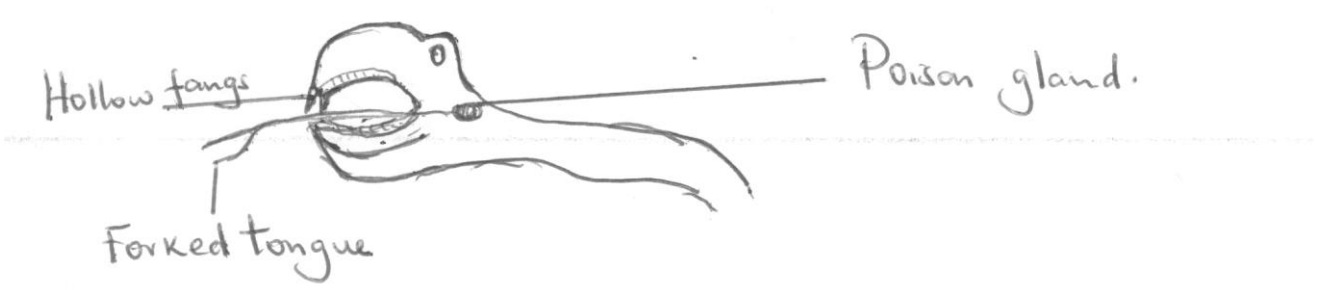
- These are snakes with poison glands and fangs.
- They bite their enemies and inject venom in the bitten part using the hollow fangs

NB:

Fangs: These are hollow teeth for a poisonous snake.

Venom: This is a poisonous liquid (fluid) snakes inject in the body of the enemy to hurt them.

The structure of the head for a poisonous snake



Fangs: They are used to inject venom in the enemies' body.

Forked tongue: It is used by snakes for tasting food and smelling.

Poison gland: It stores and produces the venom

Examples of poisonous snakes

1. Black mamba
2. Green mamba
3. Cobra
4. Puff adder
5. Horn vipers
6. Gaboon vipers
7. Boomslungs

Characteristics of poisonous snakes

1. They have poison glands and produce venom
2. They move slowly
3. They leave two marks in the bitten part
4. They move when their forked tongue is suspended out
5. They have shining skins
6. They first kill their pray before swallowing them
7. They have one pair of poison fangs (hollow teeth)
8. They have triangular heads

NB: Snakes are defensive but not offensive because they only bite for protection.

- Every snake has got its own kind of venom
- Some snakes like cobras can bite or spit venom to the enemy which can make the enemy blind.
- Not all snakes reproduce by laying eggs, some snakes give birth to their young ones like puff adders.

First aid for a snake bite

The following steps can be taken when giving the first aid for a person with a snake bite.

1. First kill the snake to identify if it was a poisonous snake or a non-poisonous snake by checking its fangs.
2. Tie the tourniquet between the bitten part and the heart but near the area bitten.
3. Keep on releasing the tourniquet for a short time.
4. Make small cuts on the bitten part using the razorblade.
5. If you don't have the wound in the mouth, suck the blood from the cut area and spit it or apply the black stone to suck out the venom

NB:

Avoid moving the bitten part to prevent faster movement of blood with venom to the heart.

- When the venom reaches the heart it makes the heart muscles paralysed and the persons shortly dies.
- The snake must be killed and taken along with the patient to the hospital for the doctor to identify the right serum (anti venom) against the bite.
- Anti venom or serum is a drug given against the snake bite.
- We always tie the tourniquet to prevent blood from carrying venom to the heart.

CONSTRICTOR SNAKES

These are very big non-poisonous snakes which kill their prey by coiling around them and squeezing them using their strong elastic muscles to suffocate them to death.

They lick their killed prey it makes them smooth or slippery for easy swallowing.

They have well developed teeth

Examples of constrictor snakes

1. Anaconda
2. Pythons
3. Boas

Advantages of reptiles to man

1. Reptiles are source of skins used for making leather products like bags, belts, drums, shoes.
2. Some reptiles like snakes and crocodiles are source of food to some people.
3. Reptiles attract tourists to the country who are source of government income.
4. Some reptiles like snakes are source of serum (anti venom) which is used to treat snake bites.
5. Reptiles control insect pests and vectors by feeding on them.

Activity:

1. Give one way you would identify a poisonous snake.

   _____

   _____

2. Why are crocodiles said to be carnivorous?

   _____

   _____

3. What makes the person bitten by the snake die if not attended to?

   _____

4. What is anti venom?

   _____

   _____

5. The snake doesn't have ears, how is it able to detect sound?

_____

_____

6. How does a chameleon get its prey?

_____

_____

7. In which way does a constrictor snake kill its prey?

_____

_____

8. How is a puff adder differ from all other snakes?

_____

_____

9. Why are snakes said to be defensive but not offensive?

_____

_____

10. How are snakes different from all other reptiles?

_____

_____

11. State the importance of each of the following to the poisonous snake:

    i) forked tongue

    _____

    _____

    ii) Hollow fangs

    _____

    _____

AMPHIBIANS

Amphibians are cold blooded vertebrates which move by leaping.
Amphibians are said to be double life vertebrates because they spend the first life in water when they are young and come on land when they are adult.

- Young Amphibians respires by means of gills
- A young amphibian is called a tadpole

Therefore, a tadpole will die shortly after being removed from water because it will lack oxygen as it can only use gills to trap dissolved oxygen found in water

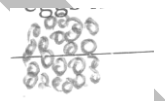
Examples of Amphibians

1. Toads
2. frogs
3. Newt
4. Salamander

Characteristics of amphibians

1. They are cold blooded
2. They reproduce by laying eggs which are soft shelled
3. They undergo external fertilization
4. Young amphibians respire by means of gills
5. The adult amphibians respire by using lung on land and moist skin in water
6. Amphibians have got 3 chambered hearts i.e 2 auricles and one ventricle
7. Amphibians spend their first life in water and during the adult stage they come on land

Differences between frogs and toads.

Toads	Frogs
1. They have short hind legs	1. They have long hind legs
2. They have no teeth in the upper jaw	2. They have teeth in the upper jaw
3. They mainly feed on insects	3. They mainly feed on vegetation
4. Their tadpoles are black	4. Their tadpoles are brown
5. They have dry rough skins	5. They have smoothly slippery skins
6. They mainly respire by means of lungs	6. They mainly respire by means of moist skin
7. They mainly live on land	7. They mainly live in water
8. They have poison gland	8. They don't have poison glands
9. They are more active at night (nocturnal)	9. They are more active during day time (diurnals)
10. They lay eggs in a double ribbon called a spawn 	10. They lay eggs in a mass form or lump form 

NB: The eggs of the amphibians are covered with jelly like or liquid substance which has got un pleasant smell to:-

i) Protect the eggs against predators

ii) To prevent the eggs from drying up which can prevent them from hatching.

<u>Nocturnal animals</u> are which are more active at night and inactive during day time.

Examples of nocturnal are;

Toads, Bats etc

<u>Diurnals</u>: Are animals which are more active during day time and inactive at night.

e.g frogs, man

Adaptations of the frogs to living in water

1. Frogs have got fully webbed feet for swimming
2. Frogs can use the moist skin to breathe in water
3. Frogs have got the streamlined body shape to reduce viscosity friction during swimming

NB: Frogs are able to live both on land and in water because they can use the moist skin to breathe in water and also lungs to breathe on land.

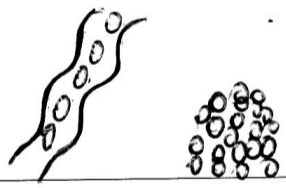
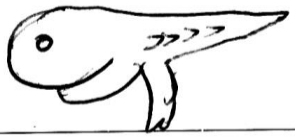
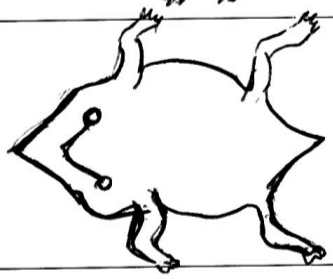
Respiration in amphibians

- ✓ The young amphibians (tadpoles) respires by means of gills.
- ✓ The adult amphibians by means of lungs on land and moist skin when they are in water

Reproduction in amphibians

- ✓ Amphibians reproduce by laying eggs
- ✓ During mating time, the male amphibians and the female one gather together in a pond or a stream then the male frog clings on top of a female frog. Then the female frog lays the eggs as the male frog sheds sperms on them and eggs become fertilized externally.
- ✓ In 1-3 days the eggs hatch into tadpoles and they start to use external gills to breathe.
- ✓ In 2 months the tadpole develop limbs

Stages of development in amphibians.

	Eggs
	External gills stage (1 – 4 days)
	Internal gills stage (8 days)
	Hind legs develop in 9 days onwards.
	• Tail shrinks develop • Fore limbs develop.
	Tail shrinks ~~develop~~ disappears. in 10 weeks.
	Adult frog.

Advantages of amphibians

1. Some amphibians are source of food to man
2. Some amphibian eat some insect vectors that help to control the spread of some diseases

Activity

1. Why are amphibians said to be double life vertebrates?

   _____

   _____

2. How are tadpoles similar to fish in terms of respiration?

   _____

   _____

3. In which way does a young amphibian respire?

   _____

   _____

4. Apart from frogs and toads, state any other two examples of amphibians.

   i) _____

   ii) _____

5. Why are frogs able to live both on land and in water?

   _____

   _____

6. Point out two physical differences between frogs and toads.

   i) _____

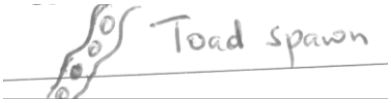
   ii) _____

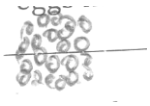
7. Which type of fertilization do amphibians undergo?

   _____

   _____

8. Which amphibian lays the eggs below?





_____ _____

9. State two similarities between the fish and amphibians.
   i) _____
   ii) _____
10. Identify two differences between the fish and amphibians.
   i) _____
   ii) _____
11. Why does the tadpole die shortly after being removed from water?

_____

_____

12. State the importance of the jelly like substance found on the eggs of the amphibians.

_____

_____

13. Why are frogs said to be diurnals?

_____

_____

14. What are nocturnal animals?

_____

_____

15. How does an adult amphibian respire?

_____

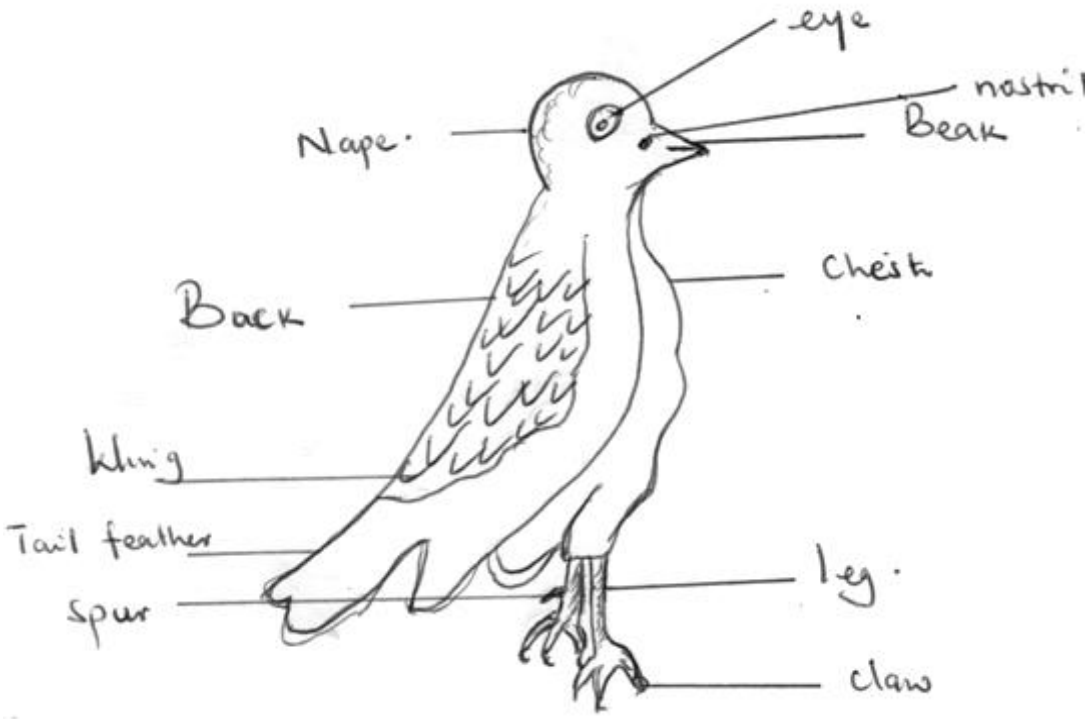
_____

DAY THREE

BIRDS

1. They are warm blooded animals (Homoeothermic)
2. They reproduce by laying eggs (oviparous) but these eggs are hard shelled
3. They undergo internal fertilization
4. They have a 4 chambered heart i.e two auricles and two 2 ventricles
5. They take care of their young ones
6. Birds bodies are streamlined to reduce viscosity friction
7. Birds respire by means of lungs
8. Birds have got 4 limbs but their fore limbs are modified into wings for flying.
9. Birds don't have teeth but have got horny beaks with nostrils
10. Birds have ear lobes covered with short feathers
11. Birds have got 3 eyelids i.e the lower and upper eye lid and the nictitating membrane to protect the birds eyes against strong blow of wind during flight
12. Birds bodies are covered with feathers
13. Their legs are covered with scales.

EXTERNAL PARTS OF THE BIRDb



Functions or uses of some parts of a bird

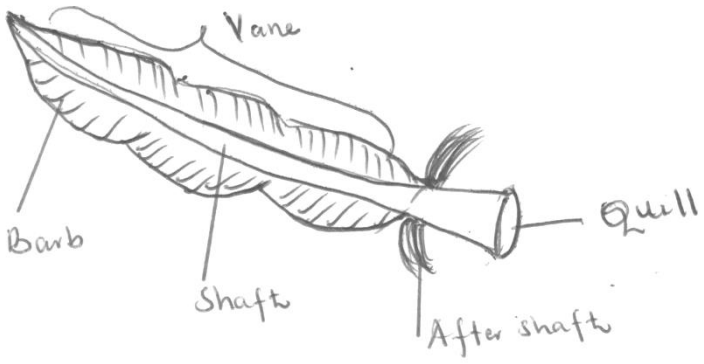
1. **Wings**: They are used by birds for flying.
2. **Spur**: It is used for protection by a bird.
3. **Nostril**: It is used for breathing.
4. **Beak**: It is used by the bird to pick food and also protection
   - It also enable broody hen to change eggs during incubation of eggs
5. **Claws**: They enable the birds to scratch the ground for getting food to eat.
   - They are used by the birds to grip or hold food or their prey
   - They are also used for protection

TYPES OF FEATHERS

1. Quill feather (flight feather)
2. Covert feather (Body feather)
3. Down feather
4. Hair feather (Filoplume feather)

QUILL FEATHERS

- They are the biggest feathers on the bird's body
- They are found on wings and tails
- They enable birds to fly and that is why they are called flight feather



COVERT FEATHERS (BODY FEATHERS)

- They cover almost the whole body of a bird
- They are of the same size
- They give warmth to birds and provide streamlining shape for easy flying

DOWN FEATHERS

- These are feathers the chicks are hatched with.
- They provide warmth to the birds and control heat loss.

HAIR FEATHERS (FILOPLUME)

These are hairy feathers and they are found nearest to the skin of the bird.

FUNCTIONS OF FEATHERS TO BIRDS

1. They enable birds to fly
2. They give birds shape and colour for easy identification
3. They provide warmth to the birds' body on cold days
4. They cover and protect the birds' body against injuries
5. They are used by a broody hen to provide warmth to the chicks and protection.

Activity:

1. Why are birds said to be homoeothermic?

   _____

   _____

2. How do birds reproduce?

   _____

   _____

3. Why are quill feathers called fight feathers?

   _____

   _____

4. State two characteristics which are common to both birds and reptiles.

   i) _____

   ii) _____

5. Why are some birds unable to fly?

_____

_____

6. State the importance of the birds' body being streamlined during flying.

_____

_____

7. In which way is the function of nostril to the birds differ from that of the fish?

_____

_____

8. List one example of a flightless bird.

_____

_____

9. How are birds different from amphibians?

_____

_____

10. State the importance of the spur to an eagle.

_____

_____

11. How are eggs laid by birds different from those of amphibians?

_____

_____

12. Why are birds said to be oviparous?

_____

_____

13. Which type of fertilization occurs in birds?

_____

_____

14. Point out two reasons why birds are able to fly.

    i) _____

    ii) _____

15. How do birds respire?

    _____

ADAPTATIONS OF THE BIRDS TO FLYING

1. Birds have got hollow bones which help to reproduce their weight during flight.
2. Birds have got streamlined bodies which help to reduce viscosity friction during flight.
3. The birds fore limbs are modified into wings for flying.
4. Birds have got wings for flapping air during flight.
5. The birds' eyes are protected against strong blowing wind by a tough membrane called nictitating membrane.
6. Birds have got strong breast muscles which enable them easily flap their wings.
7. Birds have no pinna to obstruct the flow of wind during flight.
8. Birds have got small heads and long necks which make them easily turn quickly.
9. Birds' bodies are covered with flight feathers which are bad conductors of heat and keeps them warm on cold days when flying.
10. Birds have got hollow air sac starting from the lungs which makes respiration effective during flight.

GROUPS OF BIRDS

Birds are grouped into 8 categories depending on their feeding habits and characteristics.

1. Perching birds
2. Swimming birds
3. Wadding birds
4. Climbing birds
5. Birds of prey (carnivorous birds)
6. Scratching birds
7. Scavenger birds
8. Flightless birds

PERCHING BIRDS

These are birds which have got three toes pointing forward and one toe pointing backward.

They use those toes for perching on tree branches.

Perching birds are grouped into 4 classes namely;

1. Insect eating birds
2. Nectar sucking birds
3. Seed eating birds
4. Fruit eating birds

SEED EATERS:

They have short conical beaks for picking fruits.

Examples of seed eating birds

1. Pigeons
2. Doves
3. Weaver birds
4. Finches

Seed eating birds help in seed dispersal

Dove

Insect eating birds

These are birds with short narrow beaks for picking insects from the ground.

Examples of insect eating birds.

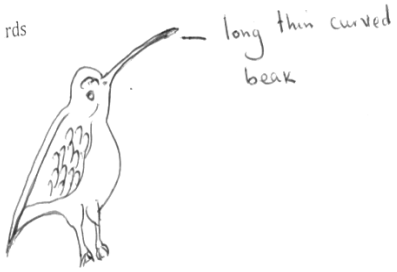
1. Sparrows
2. Robin
3. Swallows
4. Bee eaters
5. Swifts

Cuckoo

Nectar sucking birds

These are birds with long slender curved beaks for sucking nectar from flowers.
Examples of nectar sucking birds

1. Sun birds
2. Humming birds



Nectar sucking birds help in pollination of flowers.

Fruit eating birds

These are birds with long stout beaks for picking fruits from trees.
An example of a fruit eating bird is a Horn bill.

An horn bill

Fruit eating birds are harmful because they are pests but they are also useful because they help in seed dispersal.

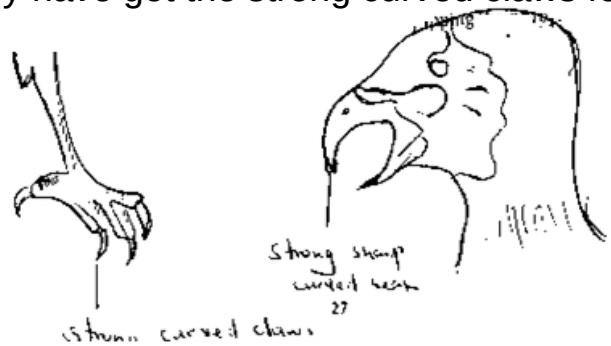
BIRDS OF PREY (FLESH EATING BIRDS)

These are birds which hunt and kill their prey.
Examples of birds of prey

1. Eagles
2. Kites
3. Hawks
4. Secretary birds
5. Falcons
6. Owls

Characteristics or adaptations of birds of prey to their mode of feeding.

1. They have got a strong harp curved beak for tearing flesh of their prey.
2. They have a good eye sight for spotting their prey from a distance.
3. They have got the strong curved claws for holding or gripping their prey.



NB: Birds of prey are harmful to the poultry farmers because they are predators to farmers'
poultry.

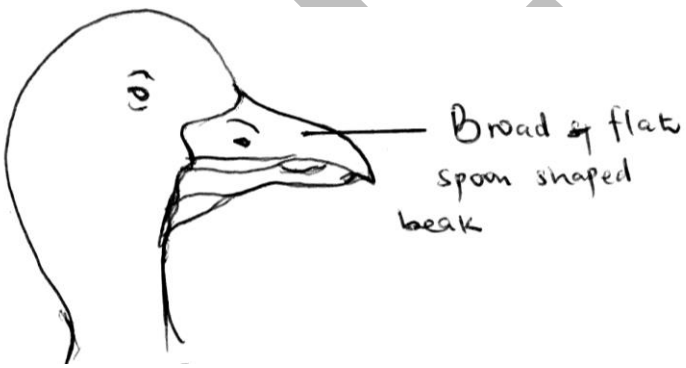
SWIMMING BIRDS

- These are birds with fully webbed feet for flapping on water and floating on water during swimming.
- They have broad flat spoon shaped beaks for spearing fish in water.
- They feed on worms, snails, fish and other insects found in mud.

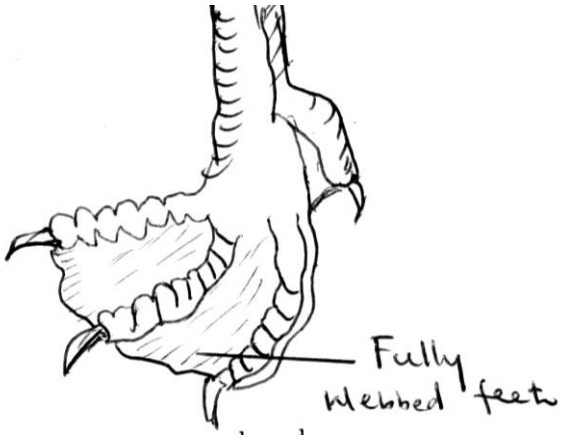
Examples of swimming birds.

1. Ducks
2. Geese
3. Swans
4. Seagulls
5. Pelicans
6. Cormorants
7. King fishers

Beak for a duck



Foot of a duck



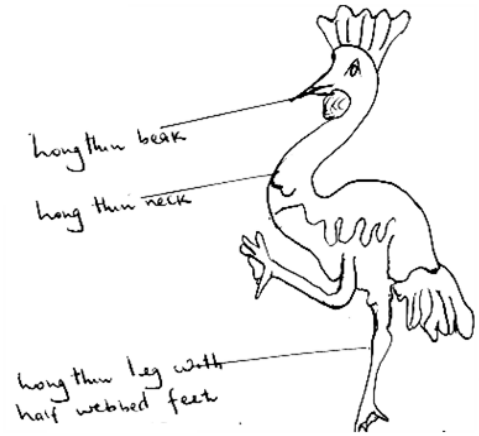
WADING BIRDS

- These are birds which live alongside water bodies.
- They have long thin beaks for catching fish, frogs and worms from water and mud.
- They have long thin legs with half webbed feet to enable them walk in mud and swallow water without sinking.

Examples of wading birds

1. Heron
2. Crested crane
3. California condors
4. Flamingo
5. Ibis
6. Snipe

Crested crane



FLIGHTLESS BIRDS

These are birds which are un able to fly but they move very fast on the ground.

- They have bone marrows which make their bodies heavy.
- They have weak and small wings compared to their body sizes.
- An ostrich is the biggest and fastest bird on earth.

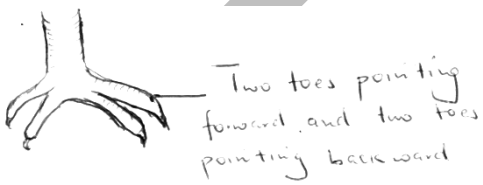
Examples of flightless birds

CLIMBING BIRDS

- These are birds with ability of climbing birds.
- They have strong chisel shaped beak for digging holes in trees.
- They have two toes pointing forward and two toes pointing backward.
- They mainly eat insects in trees.

Examples of climbing birds.

1. Wood peckers
2. Parrots



SCRATCHING BIRDS

These are birds with strong blunt stout claws for scratching the ground to find food.

- They have short pointed beaks
- They feed on grains and insects

Examples of scratching birds

1. Chicken
2. Turkey
3. Guinea fowl
4. Crested francolin

SCAVENGER BIRDS

- These are birds which feed on leftover meat of dead animals.
- They have strong sharp curved beaks for tearing flesh of their prey.

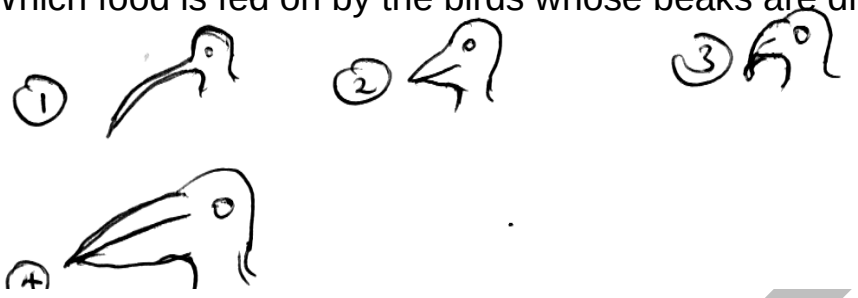
NB: The scavenger birds help to clean up the environment by eating the leftover meat of dead animals from the environment which would smell and attract houseflies.

Examples of Scavenger birds

1. Vultures
2. Crows
3. Marabou storks

Activity:

1. Which food is fed on by the birds whose beaks are drawn below?



1) _____
2) _____
3) _____
4) _____
5) _____

2. How are sun birds friendly to crop farmers?

_____

_____

3. In which way is a fruit eating bird important to man?

_____

_____

4. How is an eagle adapted to its mode of feeding?

_____

5. Why is an ostrich unable to fly?

_____

_____

6. State one characteristic of swimming birds.

_____

_____

7. Which bird is both a scavenger and a bird of prey?

_____

8. How are crows, marabou storks, ventures friendly to the environment?

_____

_____

9. In which way are webbed toes useful to a duck?

_____

_____

10. How is a sun bird adapted to its mode of feeding?

_____

_____

11. State the role of the strong sharp curved beak to birds' of prey.

_____

_____

12. State one difference between the perching birds and the climbing bird.

_____

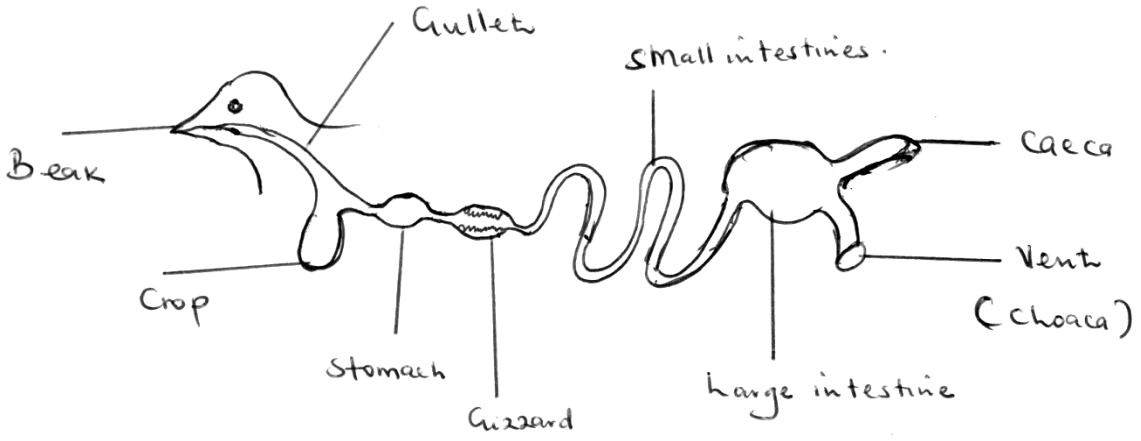
_____

13. Point out one difference between the wading bird and the swimming bird.

_____

_____

ALIMENTARY CANAL OF A BIRD



Functions of each part

Beak: It is used by the bird for picking food.

Gullet: It passes food to the crop.

Crop: It moistens, softens and stores food before it is sent to the stomach.

Stomach: It is where food is mixed with digestive juices.

Gizzard: It contains the grits or parables which help to crush down food into small particles.

NB: Grits (parables) are small stones found in birds' gizzard which breakdown food into small particles.

Small intestines: It is where digested food is absorbed in the body of the bird.

Large intestines: It is where water absorption is done.

Caeca: It is where un digested food is stored in form of droppings before it is passed out.

Cloaca/ vent: It passes out un digested food in form of droppings.

- It is also the passage of eggs during the laying process.

REPRODUCTION IN BIRDS

Birds follow the following steps during reproduction.

1. Courtship and pairing
2. Nest building
3. Mating and egg laying
4. Care for eggs
5. Care for the young ones

Courtship and pairing

It is when the birds select each other for the task of reproduction.

Nest building

This is done by parental birds in preparation for laying eggs.

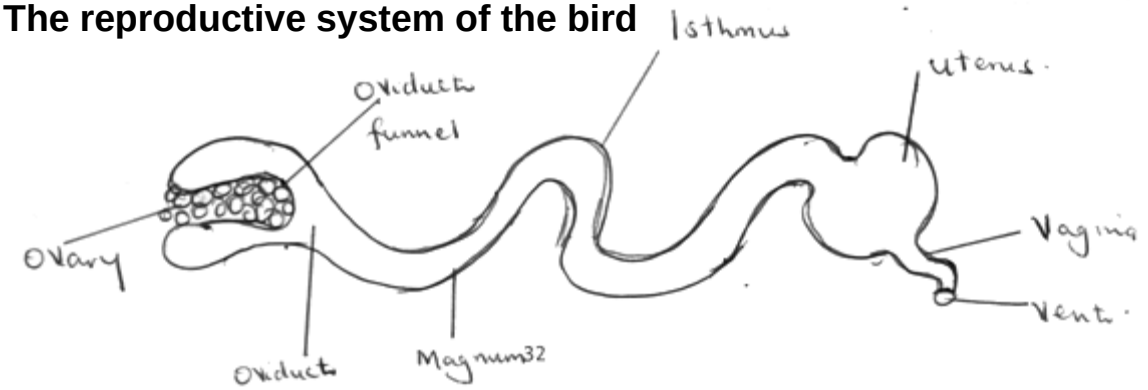
Mating and laying

This is done when the male birds mounts on top of the female bird and deposits sperms in the vent to enable internal fertilization to take place.

Care for eggs

In most cases incubation is done by only female birds through some birds like doves, incubation is done by both the male and female birds.

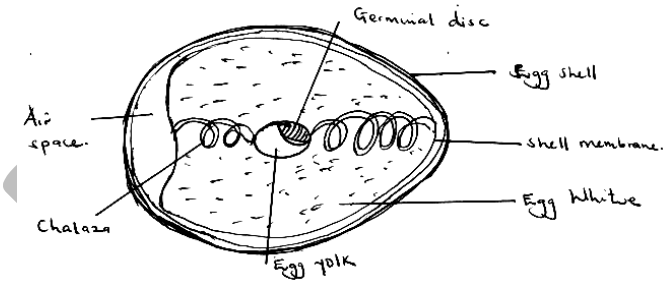
The reproductive system of the bird



FUNCTIONS OF EACH PART

1. **Ovary:** It stores and produces the mature ova.
2. **Ova:** They are the female reproductive cells.
3. **Oviduct funnel:** It receives and directs the ova to the oviduct.
4. **Oviduct:** It is where fertilization occurs.
5. **Magnum:** It is where the egg white is added to the fertilized egg.
6. **Isthmus**: It is where mineral salts and shell membrane is added to the fertilized egg.
7. **Uterus:** It is where the egg shell is added to an egg.
8. **Vagina:** It is where an egg is given colour i.e white, brown or spotted.
9. **Cloaca/vent:** It acts as the passage of an egg during the laying process.

PARTS OF AN EGG



FUNCTIONS OF EACH PART.

1. **Egg shell**: It protects the inside parts of an egg from damage.
   NB: The egg shell is porous or permeable to allow easy exchange of gases inside an egg.
2. **Shell membrane**: It protects the egg content from bacteria which may destroy it.
3. **Albumen** (Egg white): It is a source of water and mineral salts for the developing embryo.

4. **Egg yolk**: It is a source of food in form of proteins and fats for the developing embryo.
5. **Germinal disc**: It develops into a chick after fertilization.
6. **Chalaza**: - It holds the yolk and the embryo in one position.
   - It also transports fresh air from the air space to the embryo
7. **Air space**: It stores fresh air for the developing embryo.

USES OF BIRDS TO MAN

- Some birds help to carryout pollination like sun birds.
- Some birds help to carryout seed dispersal like eating birds.
- Some birds are source of food to man in form of eggs and meat.
- Birds' bones are used to make glue.
- Birds are source of feathers which are used for decoration and costumes for cultural dances.
- Some birds like scavenger birds help to clean up the environment by eating up the leftover meat of dead animals.
- Some birds like poultry are source of income to farmers.
- Birds are used for customary purpose like paying bride price.
- Some birds are used as pets at home.

DANGERS OF BIRDS TO MAN

- Some birds are pests to farmers' crops.
- Some birds keep vectors like mites.
- Some birds cause accidents on run ways of aeroplanes.
- Some birds are birds of prey and predators to poultry.
- Some birds cause sound pollution by causing or making a lot of noise like weaver birds.
- Some birds make the environment dirty with their droppings.

Activity:

1. Which type of digestion occurs in the birds' gizzard?

   _____

2. Mention three things which happen to the food in the crop of the birds' alimentary canal.

   i) _____

   ii) _____

   iii) _____

3. Which type of birds are commonly seen near abattoirs?

_____

4. Apart from protection, state any other function of the beak to a bird.

_____

5. Why do poultry farmers include small stones in the poultry mash?

_____

6. State the role of grits in the birds' gizzard.

_____

7. Why is the egg shell being porous useful to the developing embryo?

_____

8. Which reason do poultry farmers give for including calcium in the layer's mash?

_____

9. Name the part of an egg which develops into the chick after fertilization and incubation.

_____

10. Apart from holding the egg yolk and embryo in one position, state any other function of the chalaza to the embryo of an egg.

_____

11. Why are eggs important to the child's diet?

_____

12. In which way can some birds be able to control the spread of diarhoeal diseases in the community?

_____

13. Apart from being pests, how else are weaver birds harmful in the environment?

_____

14. What is incubation?

_____

_____

15. State two factors that can hinder incubation to take place.

    i) _____

    ii) _____

16. What is incubation period?

    _____

    _____

DAY FOUR

MAMMALS

Mammals are warm blooded vertebrates with mammary glands.
Most mammals give birth to their live young ones part from the egg laying mammals i.e the duck billed platypus and spiny ant eater

Examples of mammals

1. Man
2. Bat
3. Goat
4. Dog
5. Cat
10. Sheep
11. Lion
12. Leopard
13. Squirrels
14. Duck billed platypus

Characteristics of mammals

1. They have mammary glands i.e they feed their youngones on breast milk produced by the mammary glands.
2. They have well developed pinna (ear lobes)
3. They undergo internal fertilization
4. They respire by means of lungs
5. They are warm blooded (homoeothermic)
6. Their bodies are covered with fur or hair
7. They have a 4 chambered heart i.e two auricles and two ventricles
8. They have 4 limbs
9. They have the large brain protected by the skull (cranium)
10. They take care for their young ones i.e providing them with food and protection

GROUPS OR CLASSES OF MAMMALS

1. Primates (most advanced mammals)
2. Hoofed mammals (Ungulates)
3. Sea mammals (Cetaceans)
4. Egg laying mammals (Monotremes)
5. Pouched mammals (Marsupial mammals)
6. Rodents (Gnawing mammals)
7. Flying mammals (Chiroptera)
8. Insect eating mammals (Insectivorous mammals)

PRIMATES (Most advanced mammals)

These are mammals with well-developed brain.

Examples of primate mammals

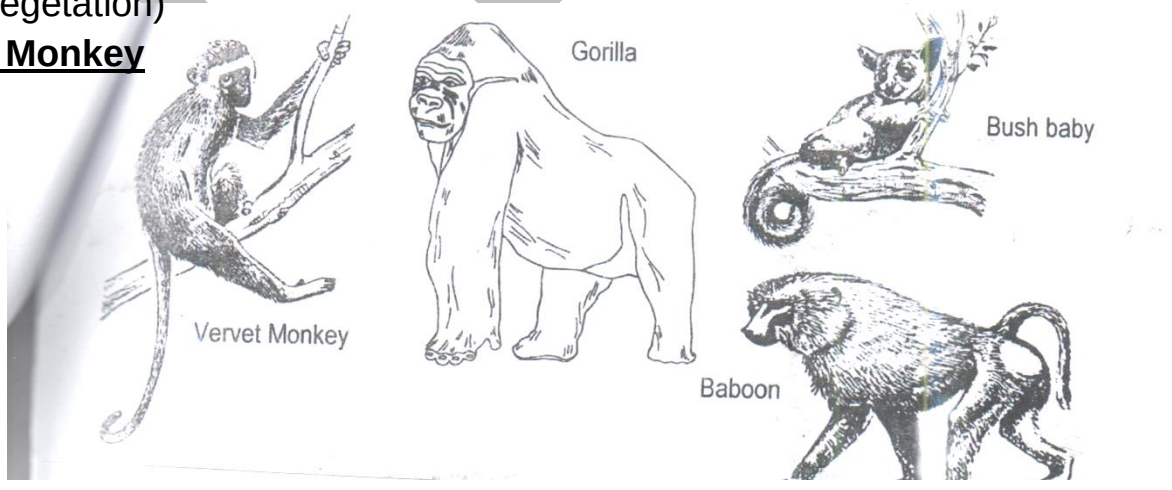
1. Man - Orangutan
2. Monkey - Chimpanzees
3. Apes - Baboons
4. Bush babies - Gorillas

Characteristics of primate mammals

1. They have well developed brains
2. They use their fore limbs for holding and two hind limbs for walking.
3. They have five fingers on each hand and five toes on each leg.
4. They have 4 different types of teeth i.e.
   - Incisors for cutting and biting food
   - Canines for tearing flesh
   - Molars and premolars for grinding, chewing and crushing down food.
5. All primates are omnivorous

NB: Omnivorous animals are animals which feed on both flesh and plant matter (vegetation)

A Monkey



Ungulates (hoofed mammals)

- These are mammals with hooves on their toes.
- They are mainly herbivorous animals.

Herbivorous animals: These are animals with mainly or entirely feed on vegetation or plant matter.

Groups of ungulates

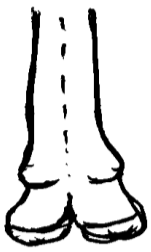
1. Even toed ungulates
2. Odd toed ungulates

Even toed ungulates: These are ungulates with even number of hooves on their feet i.e 2 or 4 hooves.

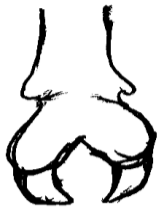
Examples of even toed ungulates.

1. Cows
2. Sheep
3. Hippopotamus
4. Goat
5. Pigs
- Okapi
- Antelopes
- Giraffe
- Camel

Camel



Cow



Odd toed ungulates

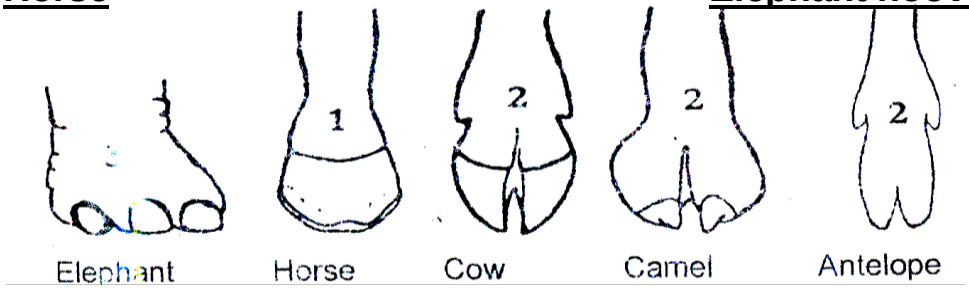
These are ungulates with odd number of hooves in their feet. i.e 1 or 3 hooves.

Examples of odd toed ungulates

- Zebra
- Elephant
- Rhino
- Horse
- Donkeys

Horse

Elephant hooves



Some ungulates are ruminants and others are non-ruminants.

Ruminant animals: Are animals which chew cud.

Cud: This is the food which is sent back in the mouth of the ruminant animals for re-chewing.

Examples of ruminant animals

- Cows
- Giraffe
- Goat
- Camel

NB: Ruminant animals have got four stomach chambers i.e Rumen, Recticulum, Omasmus and Abomasum

Non ruminant animals: These are animals which don't chew cud.

Examples of non- ruminant animals

1. Pig
2. Warthog

CARNIVOROUS MAMMALS (FLESH EATING MAMMALS)

Carnivorous mammals are mammals which feed mainly on flesh.

A predator animal is an animal which hunts and kills its prey.

A prey is animal which is hunted and fed on by a predator.

Examples of carnivorous mammals

1. Dogs
2. Lions
3. Tiger
4. Cheetah
5. Leopard
6. Fox
7. Jaguar
8. Hyena

Characteristics of carnivorous animals.

1. They have very good speed (They are very fast)
2. They have well developed canine teeth for tearing flesh of their prey.
3. They have very good sense of smell or snout to enable them trace the ways of their prey.
4. They have well developed strong curved claws or talons for killing and holding their prey.
5. They have soft pads in the feet which enable them run after their prey without making noise.
6. They have a very good sense of hearing
7. They have a very good sense of sight for spotting their prey from a distance.

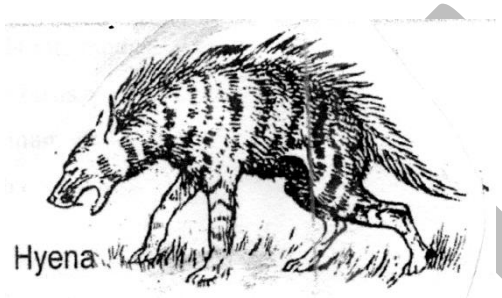
GROUPS OF CARNIVOROUS MAMMALS

1. Dog family carnivores
2. Cat family carnivores

Dog family carnivores: Are those carnivores whose body formation looks like that of a dog.

Examples of dog family carnivores.

1. Domestic dog
2. Fox
3. Hyena
4. Woves
5. Jackal



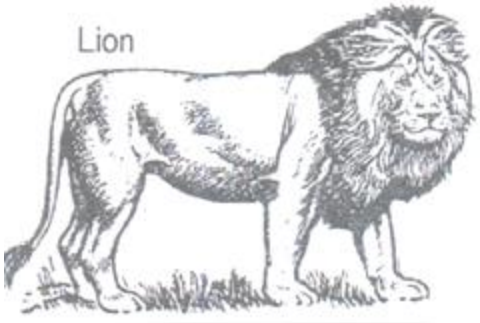
Cat family carnivores

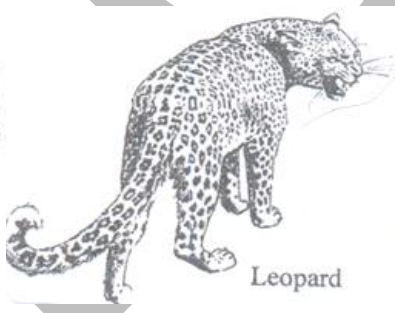
Ate carnivores whose body formation looks like that of cat.

Examples of cat family carnivores

- Leopard
- Lion
- Cheetah
- Jaguars
- Tigers

A cat family carnivore





A dog family carnivore

Activity:

1. State two unique characteristics of mammals which make them different from all other mammals.
   i) _____
   ii) _____
2. Why is a monkey said to be a primate mammal?

   _____

3. Define each of the following terms.

   a) Homoeothermic animals

   _____

   _____

   b) Poikilothermic animals

   _____

   _____

   c) Viviparous animals

   _____

   _____

   d) Omnivores

   _____

   _____

   e) Carnivores

   _____

   _____

   f) Herbivores

   _____

   _____

4. How do mammals respire?

   _____

5. In which way is a lion adapted to its mode of feeding?

   _____

6. State two similarities between birds and mammals.

   i) _____

   ii) _____

7. Which type of fertilization do mammals undergo?

   _____

8. In the space below, draw the hoof for each of the following animals.
   i) An elephant ii) cow

9. How useful are canine teeth to dogs?

   _____

10. State the importance of incisor teeth to a cow.

    _____

11. How useful are soft pads in the feet of a carnivorous mammal?

    _____

12. State one way mammals care after their young ones.

    _____

13. State the importance of mammary glands to mammals.

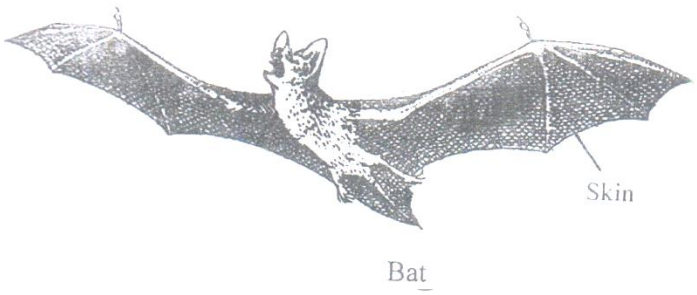
    _____

CHIROPTERA (FLYING MAMMALS)

These are mammals whose fore limbs are modifies into wings for flying.
Examples of flying mammals.

1. Bat
2. Koluga

A diagram showing a bat hanging on a tree branch.



A bat sleeping hanging upside down.

Types of bats

1. Insect eating bats
2. Fruit eating bats
3. Blood sucking bats (Vampire bats)

Insect eating bats: Are bats which feed on insects like ants, mosquitoes, mites, grasshoppers, locusts

NB: They are good because they control insect vectors and insect pests by feeding on them.

Fruit eating bats: Are bats which feed on fruits like berries, guavas, mangoes, tomatoes, pawpaws, grapes.

NB: The fruit eating bats are dangerous because they are pests to farmers' crops but they are also good because they help in seed dispersal.

Blood sucking bats (vampire bats): Are bats which suck blood from animal bodies like horses, camels, cows and buffalos.

Bats are nocturnal animals but they are more active at night and during day time.

A bat uses the echoes in order to locate food and dodge obstacles during flight night.

Insectivorous mammals

These are mammals which feed on insects.

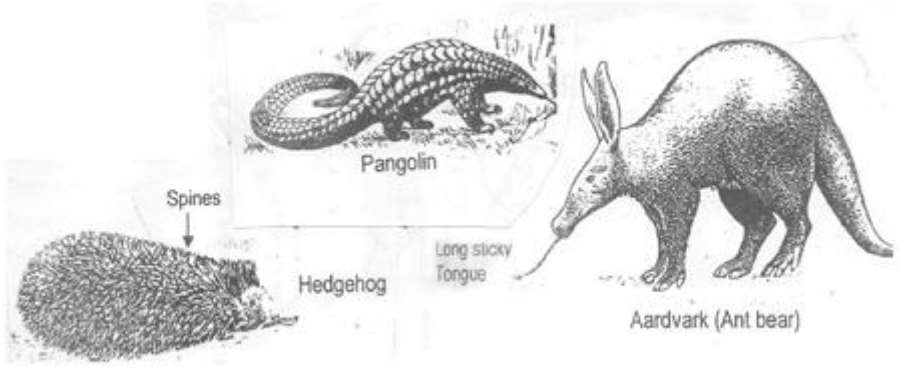
Characteristics of insectivorous mammals

1. They have a sensitive snout or a good sense of smell.
2. They have got the strong claws for digging the ground to get insects
3. They have good speed
4. They mostly hunt at night and sleep during day time (they are nocturnal)
5. Most of them are toothless (endetanta) e.g pangolin
6. Most insectivorous mammals have got sharp pointed scales on their back called spines for protection e.g. Hedge hog

Examples of insectivorous mammals

1. Hedge hog
2. Elephant shrew
3. Pongolin
4. Aard vark

Aard vark



RODENT (GNAWING MAMMALS)

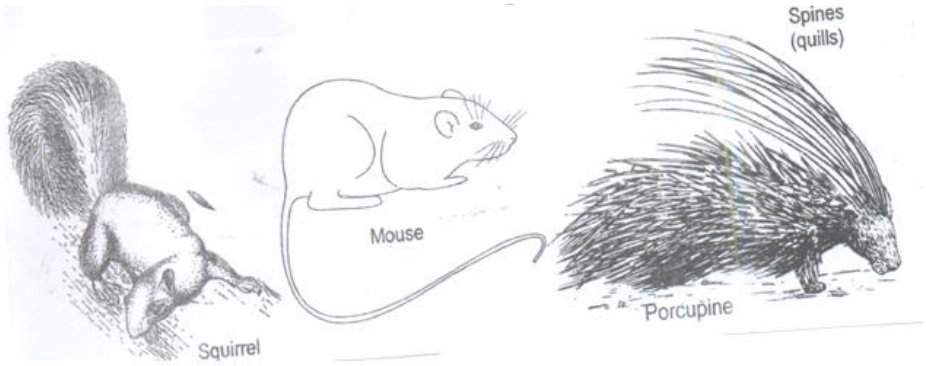
Gnawing mammals are mammals with well-developed incisor teeth for chewing rapidly and powerfully.

Characteristics of gnawing mammals.

1. They have well developed incisor teeth for chewing rapidly and powerfully.
2. They are vegetarians (They mainly gnaw on tuber crops)
3. They have well developed claws for digging holes in the ground to make their hanitats and find food.

Examples of Rodents

1. Squirrels
2. Hares
3. Rats
4. Porcupines
5. Mice
6. Guinea pigs
7. Beavers



Most gnawing mammals are very harmful to the crop farmers because they are crop pests.

POUCHED MAMMALS (MARSUPIALS)

These are mammals with pouches or pockets on their abdomens for carrying their young ones.

Young ones are carried in pouches by mothers until they are fully developed.

Pouches contains mammary glands where young ones suck the breast milk.

Examples of pouched mammals

1. Kangaroo
2. Koala bears
3. Wambat
4. Long nose band coat
5. Opossum

A kangaroo uses the tail for balancing during running

Monotremes (Egg laying mammals)

- These are mammals which reproduce by laying eggs.
- They are called primitive mammals because they reproduce by laying eggs.
- They are also called oviparous mammals.

Oviparous animals are animals which reproduce

- They are said to be mammals because they feed their young ones on the breast milk produced by mammary glands.
- They use beaks for feeding.

Examples of egg laying mammals

1. Duck billed platypus
2. Spiny out eaters

<u>A duck billed platypus</u>

Duck-billed Platypus

Spiny Anteater

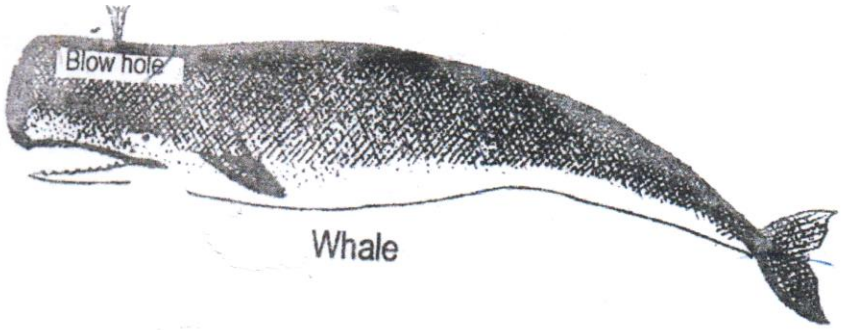
<u>CETACEAN (SEA MAMMALS)</u>

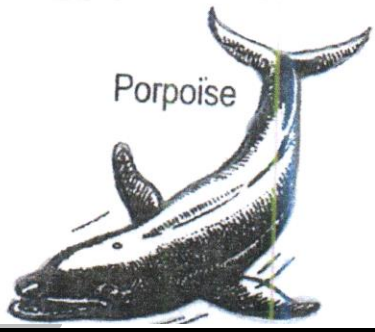
- These are mammals which live in very big water bodies likes seas and oceans
- They are aquatic animals because they live in water
- They have internal pinna
- They do not have hair on their bodies
- Their fore limbs are modified into flippers for swimming.
- They have got a flat layer inside their skin called blubber which help to generate heat in their bodies to keep them warm.
- They give birth to their live young ones and feed them on the milk produced by the mammary glands

<u>Examples of sea mammals</u>

1. Whales
2. Seals
3. Dolphins
4. Dugongs
5. Porpoises

- A whale is the largest mammal on earth.
- They are able to stay for a longer time in water after taking a long breathe.
- They respire by means of lungs.





Activity:

1. State one characteristic of ruminant animals.

   _____

2. Which type of teeth do ungulates lack?

   _____

3. Differentiate between the predator and a prey.

   _____

   _____

4. Bats are not birds, give the reason to support the statement.

   _____

   _____

5. How are bats different from all other mammals?

   _____

   _____

6. State the importance of echoes to the bats.

   _____

   _____

7. Why are bats said to be nocturnals?

   _____

   _____

8. In which way are fruit eating bats useful to man?

9. State the disadvantage of the fruit eating bats.

10. How do we call the reflected sound?

11. Why are bats able to fly?

12. Apart from a kangaroo, list only other examples of a pouched mammal.

13. Why is a duck billed platypus called a mammal when it lays eggs?

14. How useful is a pouch to a kangaroo?

15. State the unique difference between the monotremes and other mammals.

16. Of what importance is a blubber to a sea mammal?

17. Why is it wrong to say that a whale is a big fish?

18. How is a hedgehog similar to the porcupines in terms of protection?

_____

_____

19. How are rodents harmful to crop farmers?

_____

_____

20. State the similarity between the spiny ant eater and birds in terms of reproduction.

_____

_____

DAY FIVE

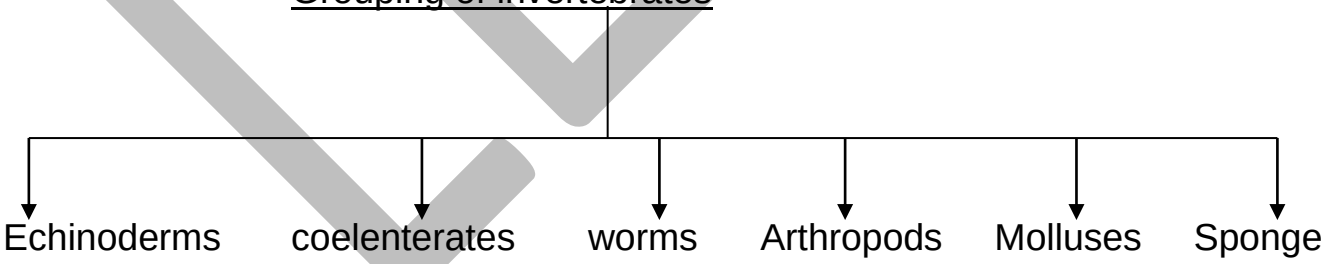
INVERTEBRATES

Invertebrates are animals without a back bone.

Examples of invertebrates.

1. Houseflies
2. Mosquitoes
3. Worms
4. Crabs
5. Jelly fish
6. Sea urchins
7. Butterflies
8. Snails
9. Oyster
10. Slugs

Grouping of invertebrates



COELENTERATES

- They are stinging animals
- They have syndical bodies with two layers
- They have only one opening on their bodies which work as the mouth and anus.
- They live in seas and oceans.

- They reproduce by means of budding.

Examples of coelenterates

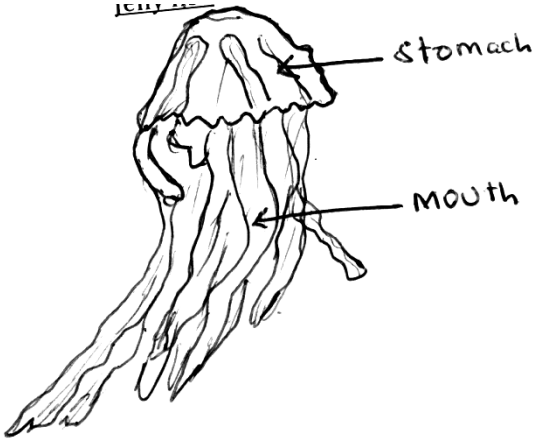
1. Hydra
2. Jelly fish
3. Sea anemones
4. Corals

Sea anemone

s

mone

Jelly fish



MOLLUSCS

Molluscs are un segmented soft bodied invertebrates.

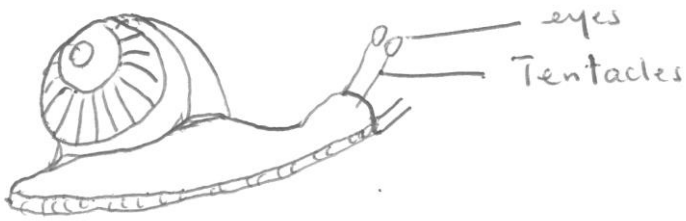
Examples of molluscs

1. Snails
2. Slugs
3. Oyster
4. Octopus
5. Cuttle fish
6. Squid

SNAILS

- These are garden snails and water snails
- Garden snails live on land while water snails live in water
- Water snails are vectors because they spread schistosoma worms that cause Bilharzia to man.
- Snails have got tentacles which they use as sense organs to touch, smelling and feeling.
- Snails have got shells where they always hide for protection against enemies
- Sea molluscs use gills for breathing
- Hard molluscs have special kind of lungs used for breathing.

Structure of a snail.



Structure of Octopus

Importance of molluscs to man.

1. Some molluscs are source of food to man
2. Their shells are used for decoration
3. Their shells are used to make animal feeds like poultry feeds

Dangers of molluscs

Molluscs like water snail spreads the schistosoma worms which cause bilharzia to man.

A person can get bilharzia through drinking un boiled water containing schistosoma worms.

Activity:

1. How are houseflies different from frogs?

   _____

   _____

2. In which way are molluscs harmful to the human health?

   _____

   _____

3. Give two examples of molluscs.

   i) _____

ii) _____

4. How can the spread of bilharzia be controlled at home?

_____

_____

5. Identify the protection mechanism for the snail.

_____

_____

6. What causes bilharzia?

_____

_____

7. State the role of tentacles to a snail.

_____

_____

8. Why does a snail die when oil is poured onto its skin?

_____

_____

9. State the main characteristic of invertebrates.

_____

10. How do coentraterates protect themselves?

_____

11. State the benefit poultry farmers can obtain from molluscs.

_____

_____

12. Why is bilharzia said to be a water borne disease?

_____

_____

ECHINODERMS

- They are sea invertebrates
- They have spiky skins
- They have un segmented bodies

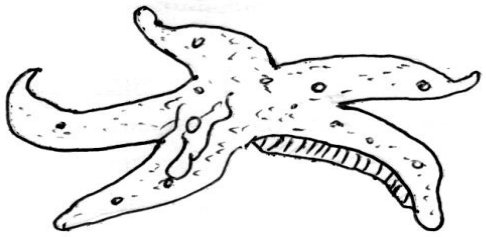
Examples of echinoderms

1. Star fish
2. Sea urchins
3. Sea cucumber
4. Sea lilies

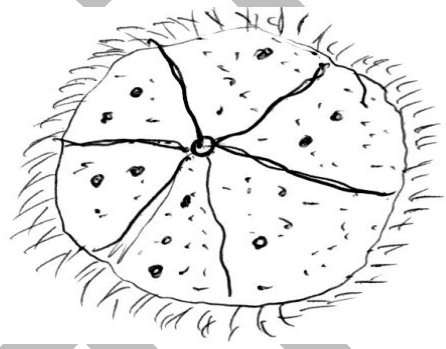
Structure of some echinoderms

Star fish

h



Sea urchins



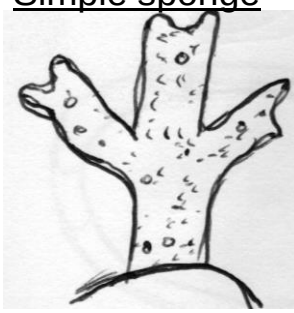
SPONGES (PORIFERA)

- They are sea invertebrates
- They look like plants but they are animals
- They live in colonies
- They do not always move about
- They always remain attached to the floor of the sea
- They have many holes on their bodies
- These holes are used for breathing and feeding
- Food and oxygen are absorbed from water as water flows over the holes

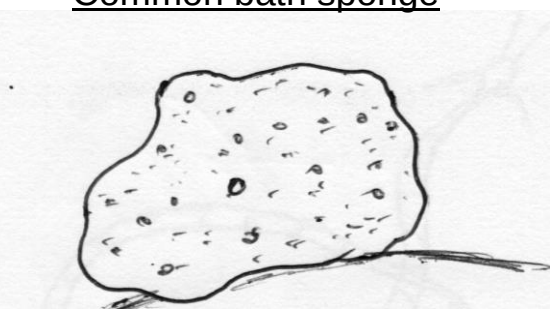
Examples of sponges

1. Simple sponge
2. Common bath sponge

Simple sponge



Common bath sponge



WORMS

- Worms are long thin and soft bodied invertebrates
- They breathe through their moist skins

Groups of worms

1. Segmented worms (Annelids)
2. Flat worms (platy-helminthes)
3. Round worms

SEGMENTED WORMS

- These are worms with body segments (rings)
- They live in water and soil

Examples of segmented worms

- Earth worms
- Leech
- Bristle worms

Hermaphrodites are animals with both male and female reproductive organs.

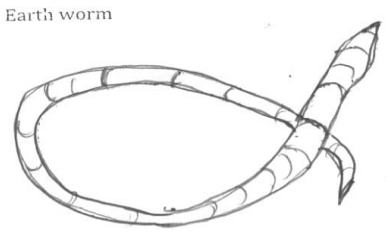
Other examples of hermaphrodites are;

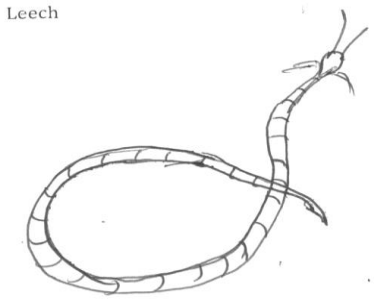
- Tape worms
- Snails

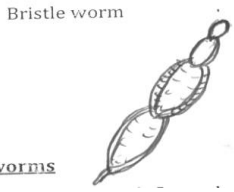
Importance of earth worms

1. They help to aerate the soil
2. They decompose the organic matter to form humus
   Earth worms create the soil through making tunnels in the soil as they move through it.

- After heavy rain earth worms come out of the soil to get oxygen for breathing.
- Earth worms use the moist skin for breathing.
- Earth worms die when oil is poured on its skin because the oil will block the oxygen supply onto the moist skin.







Flat worms

Flat worms

These are worms with flat and segmented bodies.

Examples of flat worms.

Tape worms

Liver flukes

TAPE WORMS

They are endo-parasites

A parasite is a living organism that depend on another organism for shelter and food without killing it but causing harm to them.

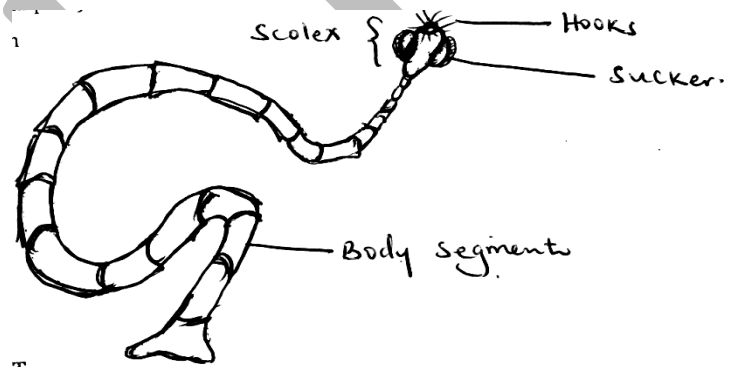
- Tape worms live in intestines (ileum)
- They feed on digested food in the ileum

How tapeworms enter the body

- Through eating under cooked eat from an infected animal.
- Through drinking un boiled water containing tape worm eggs.
- Through eating un washed raw contaminated green vegetables.
- Through eating un washed contaminated fruits.

Signs of tapeworms infection

- Passing out faeces containing tape worm eggs and segments.
- Passing out watery stool
- Constant hunger
- Stomachache (Abdominal pain)
- Swelling of the abdomen



FUNCTIONS OF EACH PART

Hook: They enable the tapeworms to attach itself on the walls of the intestines.

Suckers: They enable a tape worm to attach itself on the walls of the intestines.

Effects of tape worm infection

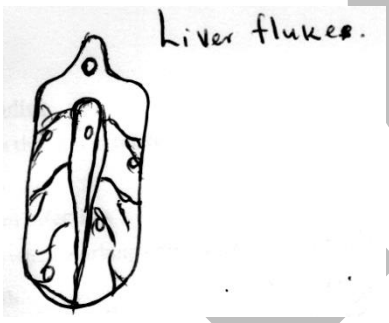
1. It causes malnutrition and poor growth in children.
2. It causes stomach discomfort (abdominal pain)

Ways of controlling tape worms

- Through eating well cooked or properly cooked meat (beef/pork)
- Through drinking properly boiled water
- Through eating properly washed raw greens vegetables
- Through regular deworming

LIVER FLUKES

- They are paper like
- They always live on the liver of an infected animal
- They damage the liver of the infected animal
- Liver flukes can enter the body through drinking un boiled water containing liver flukes.
- It can be controlled through deworming and drinking properly boiled water.



ROUND WORMS (Nematodes)

- They are cylindrical in shape
- Some live in water and other soil
- They are pointed on both ends

Examples of round worms

1. Common round worms
2. Hook worms
3. Eel worms
4. Pin worms

- They live in the intestines and feed in the digested food.
- They enter the body through eating un washed contaminated and raw green vegetables
- They can also be spread through drinking un boiled contaminated water

Ways of controlling round worm infection

1. By eating washed fruits and vegetables
2. By drinking properly boiled water
3. By washing hands before eating food

HOOK WORMS

- Hook worms are found in blood streams.
- They suck blood from the blood streams.

How hook worms enter our bodies.

- Through penetrating through the skin of the feet when we walk with the bare feet in the dirty wet places like latrines.

Ways of controlling hook worm infection

- By wearing shoes or sandals when working or walking in the dirty wet places.

Effects of hook worm infection.

Hook worms suck blood from our bodies and cause hook worm anaemia to the person.

Anaemia is the condition in which a person does not have enough blood in the body.

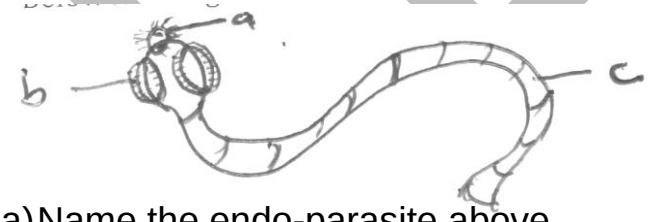
Activity:

1. Why are worms said to be invertebrates?

   _____

   _____

2. Below is a diagram showing an example of an endo parasites.



a) Name the endo-parasite above

   _____

b) Name the parts marked

   a _____ b _____

   c _____

3. How useful is part marked (a) to the organism above?

   _____

4. State one effect of the above parasite to children.

   _____

5. State the best way of controlling the above parasite.

   _____

6. Why are people advised to eat properly cooked pork?

   _____

7. State the importance of earth worms to the crop farmer.

   _____

8. Identify the best way hook worm infection can be controlled.

   _____

9. Why do people always wear gumboots when working in the dirty places?

   _____

10. What is deworming?

    _____

    _____

11. Define the following terms
    a) Endo-parasites

       _____

       _____

    b) Ecto-parasites

       _____

       _____

12. Which type of worms are
    i) Tape worms

       _____

    ii) Hook worms

       _____