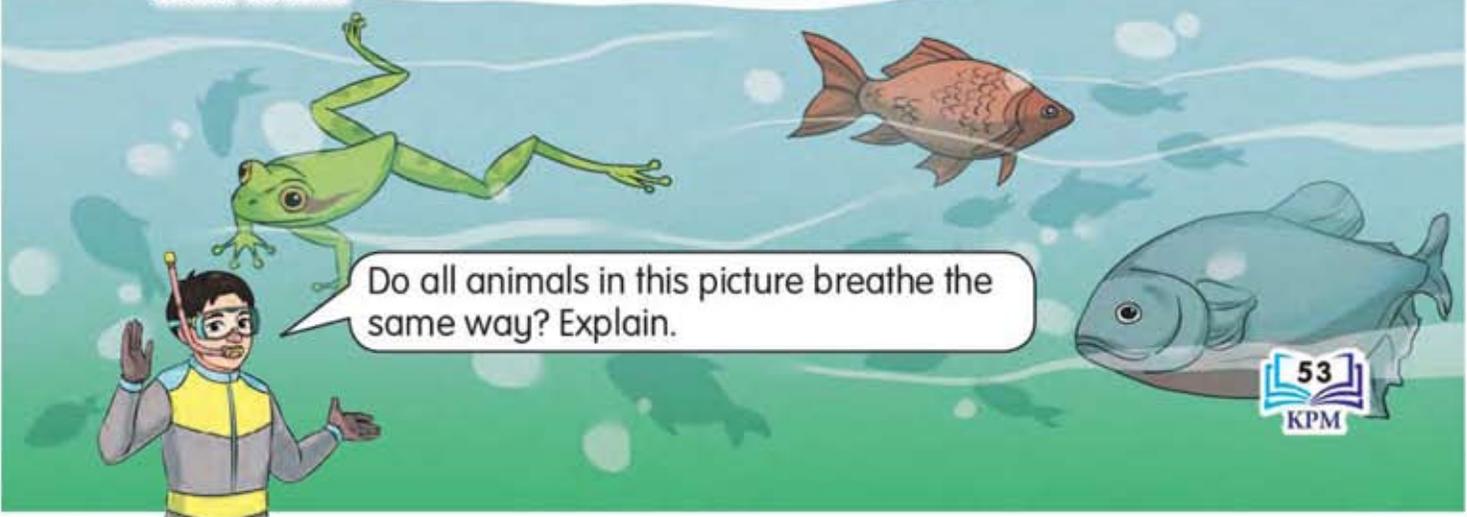


# UNIT 3

# ANIMALS



All around us, there are animals that live on land, that live in water, and those that can live both on land and in water. Animals need to breathe in order to live.



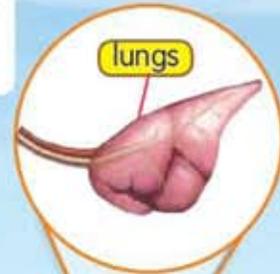
Do all animals in this picture breathe the same way? Explain.

## Breathing Organs of Animals

Observe the picture below.

### Lungs

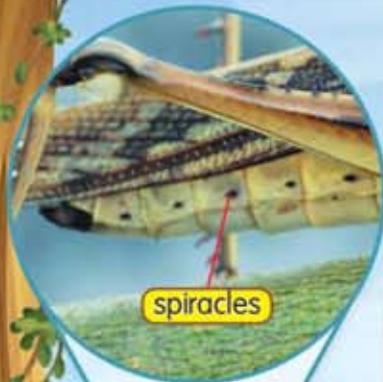
Normally, animals that live on land breathe using their lungs. For example, cows.



Cow

### Spiracles

Animals such as insects breathe through spiracles. For example, grasshoppers.



spiracles

Grasshopper



Chicken

### Gills

Normally, animals that live in water use their gills to breathe. For example, fish.



Crab



gills



Fish

### Moist skin

Animals such as worms breathe through their moist skin.

Can you identify the breathing organs of chickens, leeches, crabs, and dragonflies?

Leech

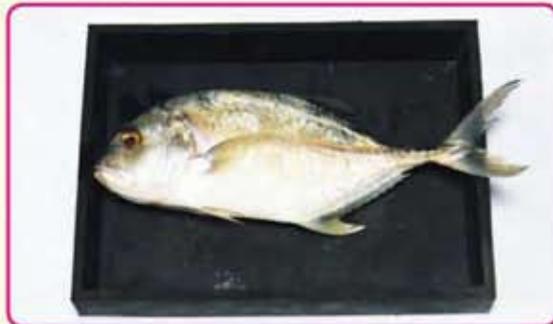


Worm



**Apparatus and Materials**

Fish, specimen tray, gloves, forceps, hand lens, A4 paper, marker pen

GROUP  
ACTIVITY**Steps**

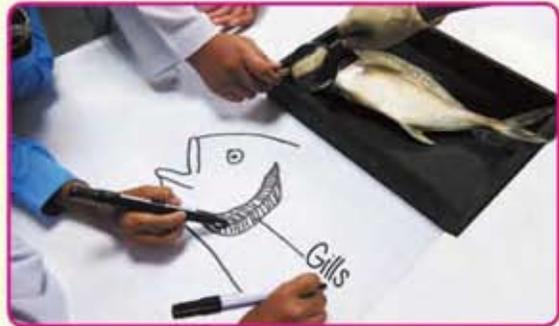
1. Place a fresh fish on the specimen tray.



2. Lift the part of the fish covering the gills using the forceps.



3. Observe the gills using the hand lens.



4. Sketch the gills on the A4 paper. Then, label accordingly.

**Question**

What are other animals that breathe using gills?

## Classification of Animals Based on Their Breathing Organs

Observe the pictures below.



Crab



Caterpillar



Tadpole



Worm



Freshwater leech



Cat



Butterfly

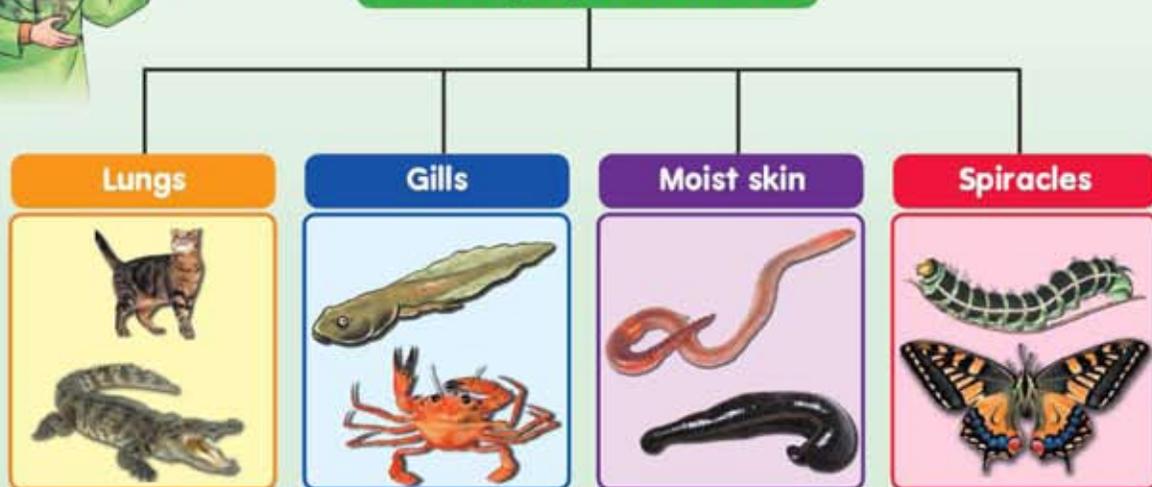


Crocodile



Animals can be classified according to their breathing organs, which are **lungs**, **gills**, **moist skin**, and **spiracles**.

### Breathing organs of animals



Classify the animals below according to their breathing organs.



Goat



Prawn



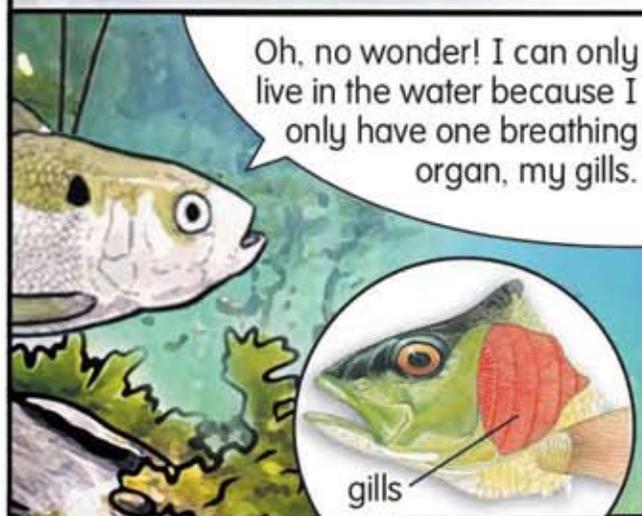
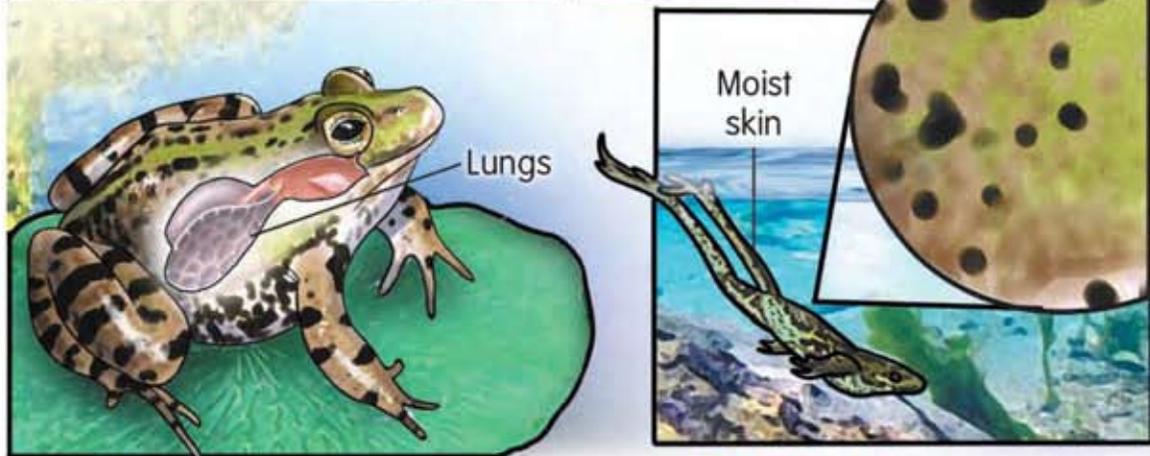
Land leech



Ant

## Living on Land and in Water

One evening, a frog and a fish were having a conversation in a pond.



### SCIENCE INFO

Other than frogs, caecilians and newts also have more than one breathing organ. They can breathe through their lungs and moist skin. Caecilia lives in tropical regions while salamanders are not found in our country. They are only found in regions with cold and temperate climates.



Based on the conversation between the fish and the frog, what can you conclude about the breathing organs in some animals?

## Vertebrates and Invertebrates

Do you know that there are animals which have backbones and there are those that do not have backbones?

Hi, I am an earthworm.

Hi, I am a snake.

What is the difference between the two animals above? Observe the structures below.

backbone

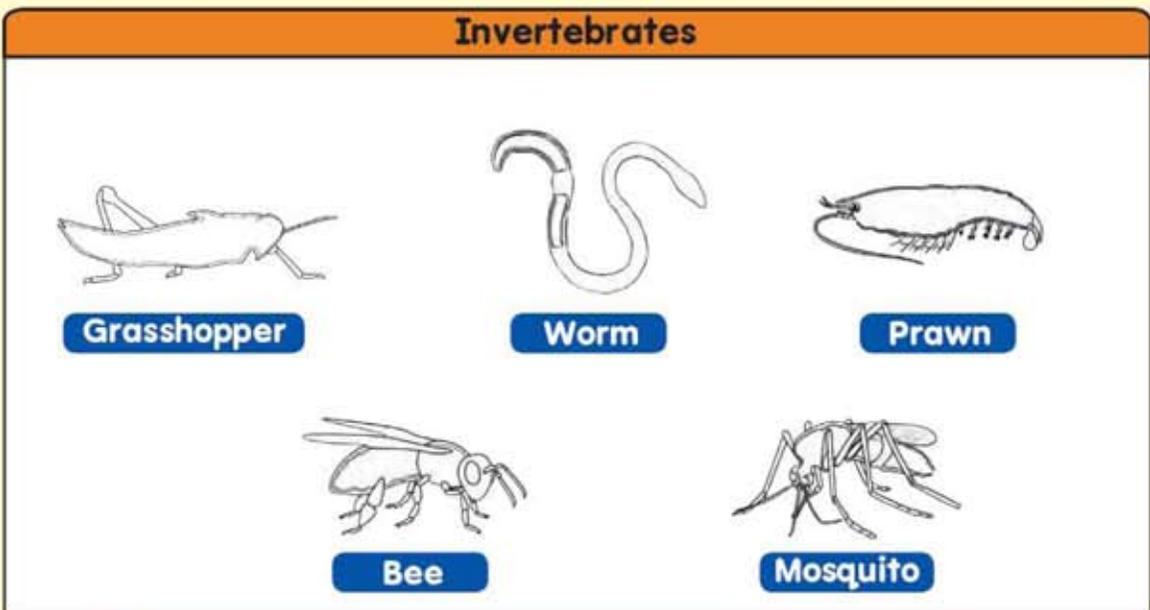
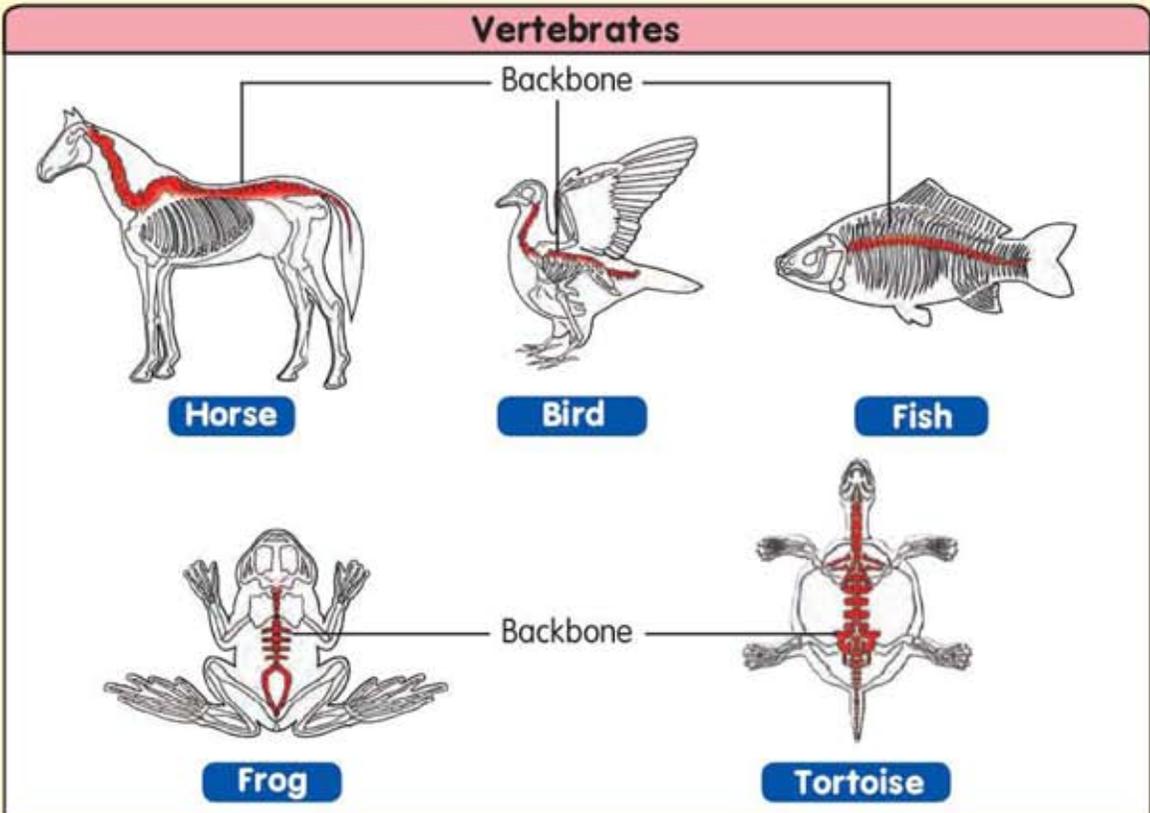
no backbone

A snake is an example of **vertebrate** because it has a backbone. An earthworm is an example of an **invertebrate** because it has no backbone.

What do vertebrate and invertebrate mean?



Observe the following examples of vertebrates and invertebrates.



Can you give other examples of vertebrates and invertebrates?



## Specific Characteristics of Vertebrates

Besides breathing organs, we can also classify animals based on specific characteristics such as methods of reproduction, their body coverings, and habitats. Based on these specific characteristics, vertebrates can be classified as **mammals**, **reptiles**, **amphibians**, **birds**, and **fish**.

### Mammals

- Breathing organ: lungs
- Method of reproduction: give birth
- Body covering: fine hair
- Habitat: on land
- Examples: deer, cat



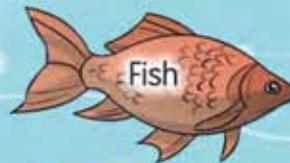
### Amphibians

- Breathing organs: lungs and moist skin
- Method of reproduction: lay eggs
- Body covering: moist skin
- Habitats: on land and in water
- Examples: frog, caecilia



### SCIENCE-INFO

Whales are mammals that live in the sea. They are mammals because they give birth to their offsprings and breathe with their lungs.



### Fish

- Breathing organ: gills
- Method of reproduction: lay eggs
- Body covering: scales
- Habitat: in water
- Example: fish





Why do dolphins often swim to the surface of the water although their habitat is in the water?

### SCIENCE-INFO

Bats are mammals that can fly but they are not classified as birds.



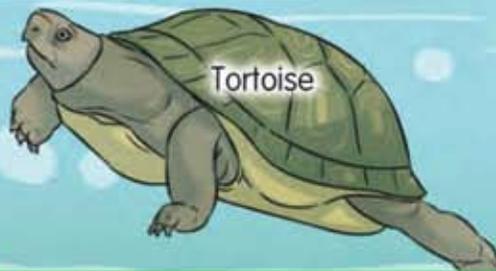
### Birds

- Breathing organ: lungs
- Method of reproduction: lay eggs
- Body covering: feathers
- Habitat: on land
- Examples: chicken, stork



### Reptiles

- Breathing organ: lungs
- Method of reproduction: lay eggs
- Body covering: scales or hard shell
- Habitat: mostly on land
- Examples: tortoise, crocodile



### SCIENCE-INFO

The platypus is a unique mammal that lays eggs but it suckles its offspring. Platypuses spend most of their time in water compared to on land.





## FUN ACTIVITY

## Classifying Vertebrates

### Apparatus and Materials

Animal picture cards on strings, manila card, marker pen



### Steps

1.



Using your creativity, construct a classification table of vertebrates. Then, choose a group representative and put the animal picture card on his/her back without him/her looking.

2.



The pupil with the picture card should ask the group members about specific characteristics of the vertebrate on the picture cards such as methods of reproduction, breathing organs, body coverings, and habitats.

3.



The group members can only answer “**yes**” or “**no**”.

4.



After the question and answer session, the pupil guesses what picture of vertebrate is put on his/her back.

5.



If the answer is correct, the pupil places the picture card on the classification table of vertebrates.

6.



If the answer is incorrect, the pupil is allowed to ask additional questions on other characteristics of the vertebrates with the help of the teacher.

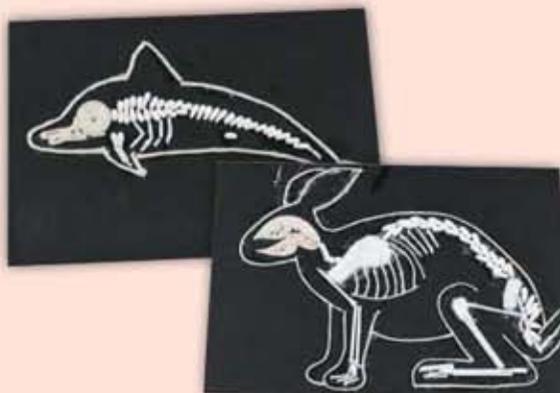
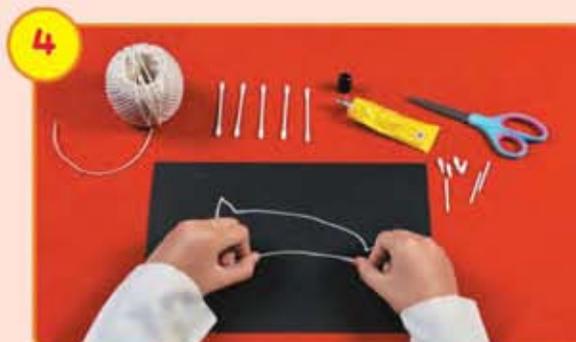
### Question

What are other examples of vertebrates that can be classified based on the specific characteristics of mammals, reptiles, amphibians, birds, and fish?



Steps

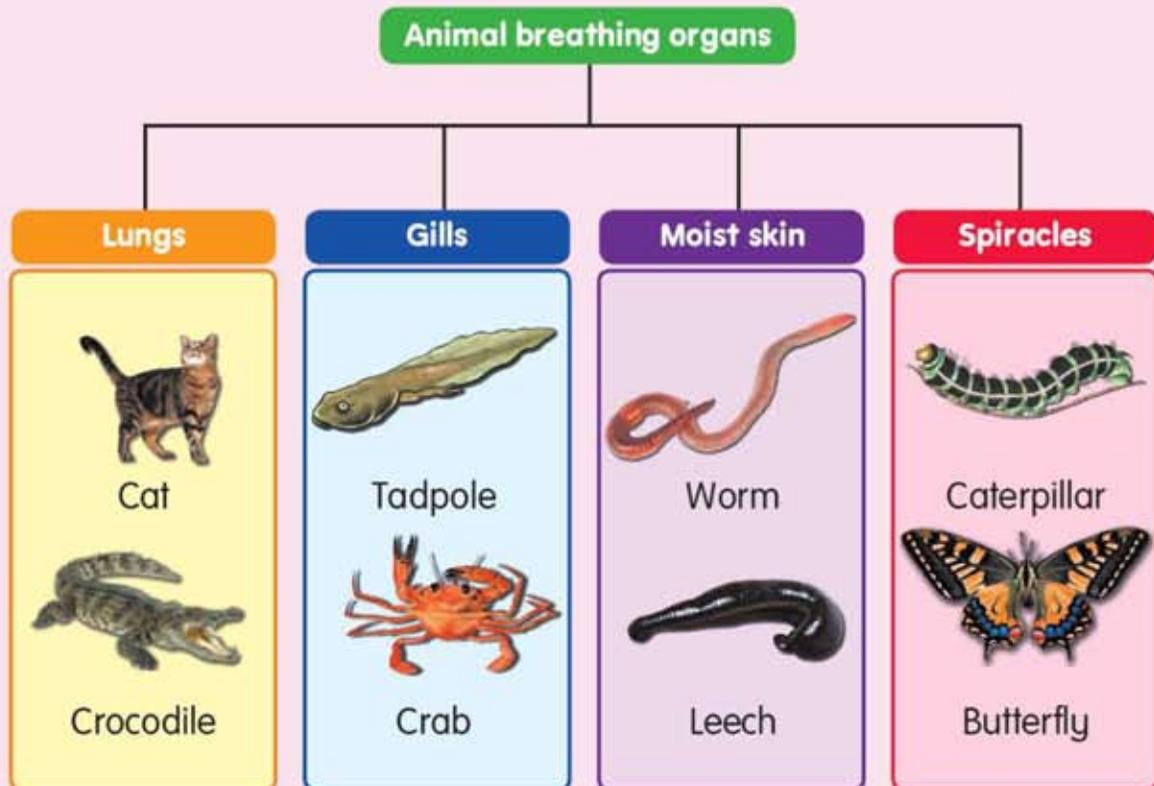
Make an x-ray card of the skeleton of a vertebrate based on your creativity. Use a black cardboard, cotton buds, string, glue, scissors, and other used materials.





## MIND REFLECTION

1. Animals breathe using organs such as lungs, gills, moist skin, and spiracles.
2. The classification of animals based on their breathing organs is as follows:

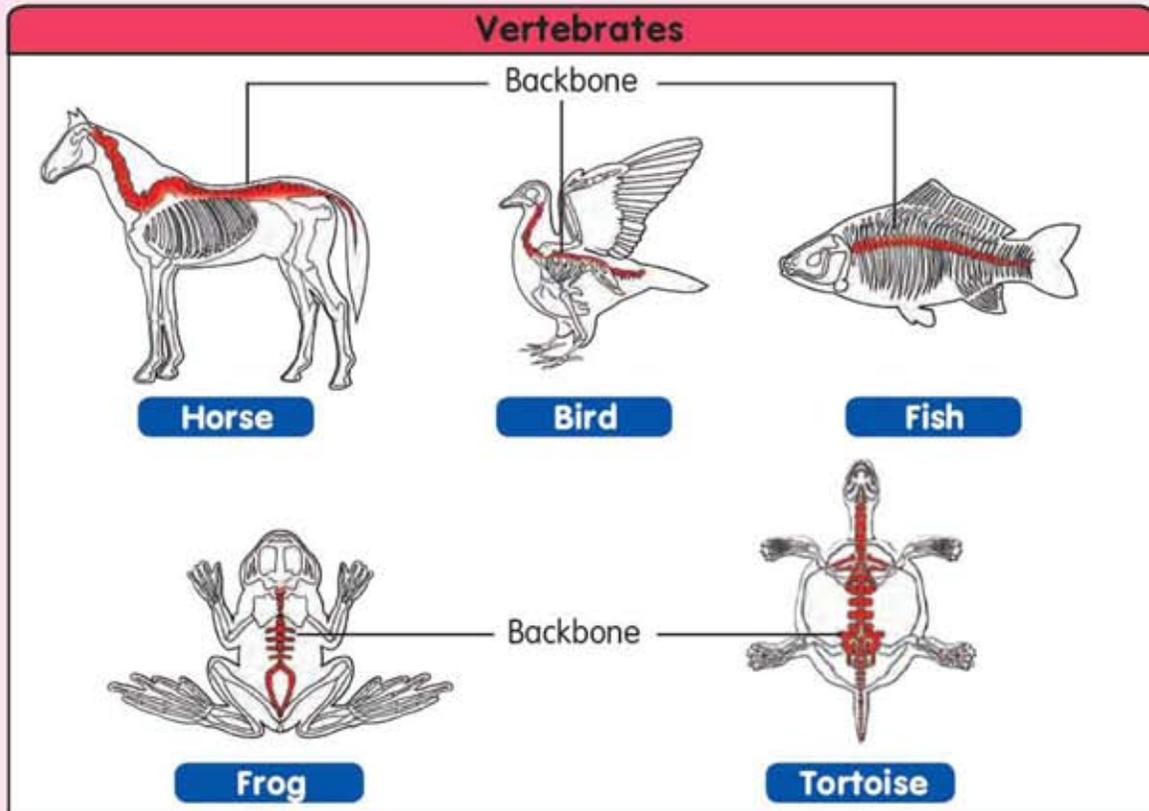


3. There are animals that have more than one breathing organ such as frogs. Usually, these animals can live in two different habitats. Frogs breathe using their lungs when on land. They breathe using their moist skin when they are in water.



A zoologist has discovered a new species of animal in a forest. However, he did not classify the animal as a mammal, bird, fish, reptile or amphibian. Why?

4. Vertebrates are animals with backbones such as horses and fish.



5. Invertebrates are animals with no backbones such as cockroaches and worms.

6. Vertebrates can be classified as mammals, reptiles, amphibians, birds, and fish.

7. Specific characteristics of vertebrates are as follows:

Class of animal	Breathing organ	Method of reproduction	Body covering	Habitat
Mammal	Lungs	Gives birth	Fine hair	On land
Reptile	Lungs	Lays eggs	Scales or hard shell	Mostly on land
Amphibian	Lungs and moist skin	Lays eggs	Moist skin	On land and in water
Bird	Lungs	Lays eggs	Feathers	On land
Fish	Gills	Lays eggs	Scales	In water



## MIND TEST

Answer all questions in the Science exercise book.

1. Which animal and its breathing organ is correctly matched?

	Animal	Breathing organ
A	Tadpole	Lungs
B	Cow	Spiracles
C	Turtle	Gills
D	Worm	Moist skin

2. Construct a classification table for the following animals based on their breathing organs.

(a)	(b)	(c)	(d)
			
Tadpole	Snail	Deer	Prawn
(e)	(f)	(g)	(h)
			
Butterfly	Lizard	Cockroach	Leech

3. The information below describes animal X.

When I was young, I lived in the water and breathe using my gills. As an adult, I am able to live in water and on land because I have two breathing organs.

Which of the following could be animal X?

A Fish    B Turtle    C Crocodile    D Toad

4. What is meant by vertebrates and invertebrates?  
5. Construct a suitable mind map for the following vertebrates and invertebrates.

					
Tortoise	Centipede	Starfish	Caecilia	Tiger	Grasshopper

6. Construct a classification table for the following vertebrates. State their specific characteristics.

(a)



Bear

(b)



Goose

(c)



Crocodile

(d)



Toad

(e)



Fish

7. Which of the following animals below can live both on land and in water? State your reason.



Frog



Lizard

8. The figure below shows an animal that lives in water.



Why is it not classified as a fish?