What Is This Module About?

Do you have a pet at home? If you do, what kind of animal is it? Think about your pet. Do you take good care of it? Would you like to know more about your pet as well as some other animals? Read on to learn more!

This module is divided into three lessons. These are:

Lesson 1 – *Classification of Animals*

Lesson 2 – *Life Cycles of Some Animals*

Lesson 3 – *Animals Are Our Friends*

What Will You Learn From This Module?

After studying this module, you should be able to:

1. name some animals found at home and in the community;
2. classify animals according to structure, habitat and food eaten;
3. compare the life cycles of some animals;
4. cite the importance of animals to humans; and
5. demonstrate proper care and handling of animals and observe animal conservation.

Let's See What You Already Know

Before you start studying this module, take the following test first to find out how much you already know about the topics to be discussed. Write the letter of your choice on the line before the number.

_____ 1. Which of these animals can you find at home or in your community?

a. lion
b. tiger
c. leopard
d. cat

_____ 2. The following are all vertebrates **except** _____.

a. man
b. dog
c. fish
d. housefly

_____ 3. Which is **not** an invertebrate?

a. jellyfish
b. whale
c. shrimp
d. octopus

_____ 4. Which of the following serves as a habitat for rats?

a. rice field
b. house
c. barn
d. all of the above

_____ 5. Fishes thrive in an aquatic habitat. Where can you **not** find fishes?

a. river
b. lake
c. desert
d. ocean

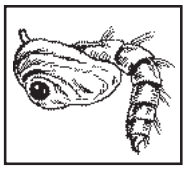
_____ 6. Which of the following is a herbivore?

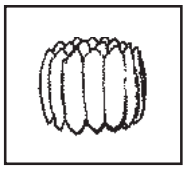
a. elephant
b. man
c. snake
d. chicken

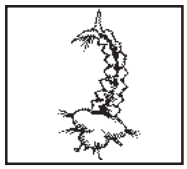
_____ 7. Which of the following is a carnivore?

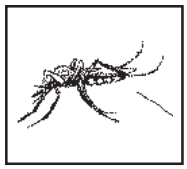
a. carabao
b. goat
c. rat
d. hawk

_____ 8. Below are pictures of the stages of the life cycle of a mosquito. Which of the following choices correctly corresponds to the stage shown in the picture above it?


a. adult


b. eggs


c. pupa


d. larva

_____ 9. Animals are important because _____ .

a. they are sources of food
b. they serve as sources of income
c. they help people carry out their tasks
d. all of the above

_____ 10. Which statement shows proper handling and care of animals?

a. Feed your animals only once a week.
b. Give your animals food and fresh clean water daily.
c. Bring your pet to the veterinarian every five years.
d. Keep your pet in a covered cage all the time.

Well, how was it? Do you think you fared well? Compare your answers with those in the *Answer Key* on page 47.

If all your answers are correct, very good! This shows that you already know much about the topics in this module. You may still study the module to review what you already know. Who knows, you might learn a few more new things as well.

If you got a low score, don't feel bad. This means that this module is for you. It will help you to understand some important concepts that you can apply in your daily life. If you study this module carefully, you will learn the answers to all the items in the test and a lot more! Are you ready?

You may go now to the next page to begin Lesson 1.

Classification of Animals

Look around you. How many kinds of animals do you see? Which of these animals belong to the same group? How do we separate animals into groups? This lesson will help you name some animals commonly found in your home and in your community. It will also teach you about animals that are grouped on the basis of structure, habitat and food eaten.

Let's Try This

1. In the beginning of this module, I asked you some questions about your pet animal. Think of your pet again. Why do you like it?

   _____

   _____

2. Can you describe your pet's physical appearance? Write it down.

   _____

   _____

3. What tricks can it do?

   _____

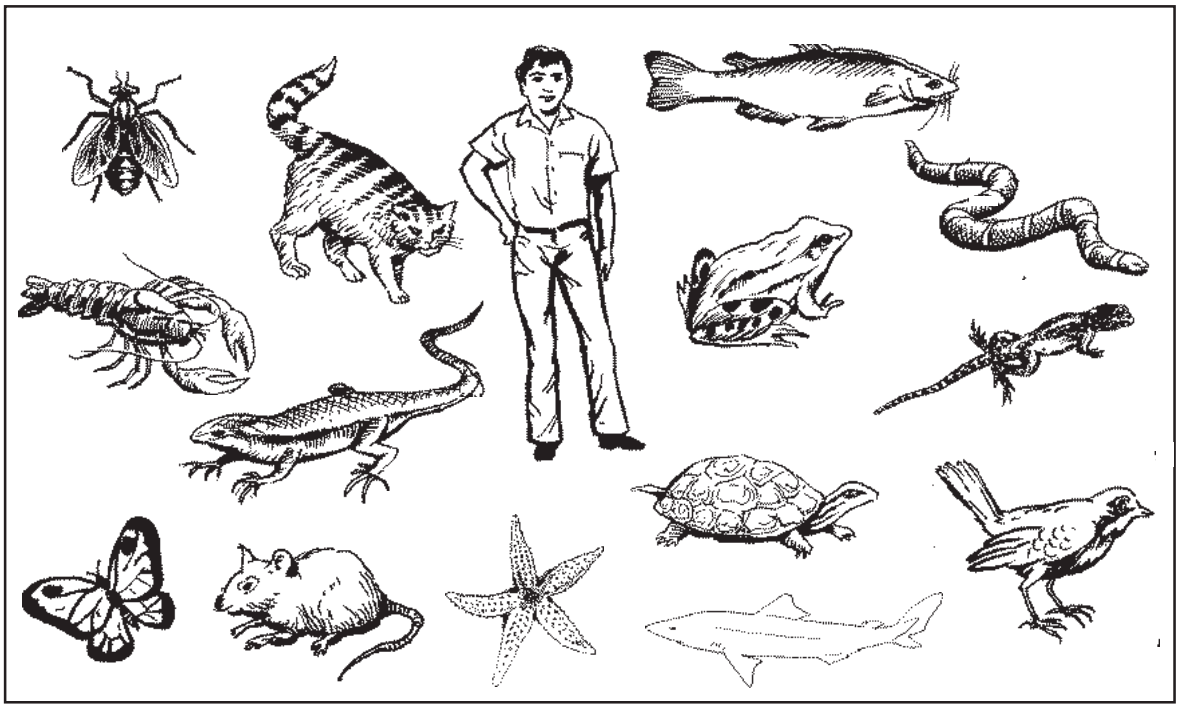
   _____

4. How do you care for your pet?

   _____

   _____

5. Can you identify ten of the following animals which may be found in your home or in your community? Name them.



_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Compare your answers with those in the *Answer Key* on page 47.

Let's Learn

Classification of Animals

There are so many animals on earth. If we are to study all of them one by one, it will take us a very long time to do so. Thus, scientists have thought of ways of grouping animals in order to study them more systematically.

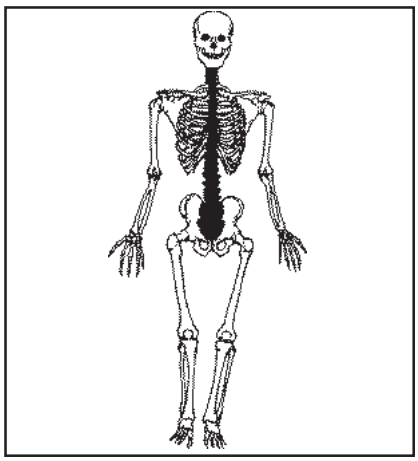
One way of grouping animals is according to structure. Based on this classification, there are two types of animals—vertebrates and invertebrates.

Classifying Animals According to Structure and Size

Do you know what vertebrates are? You are a vertebrate. So are most of the animals you often see in your environment, such as dogs, cats, birds and fishes. **Vertebrates** are animals with backbones.

Vertebrates

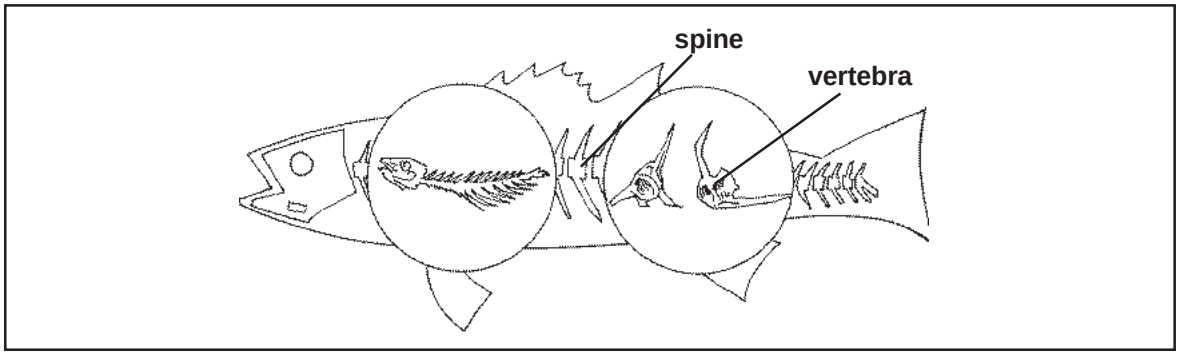
What characteristics make vertebrates different from other animals? First of all, as I mentioned earlier, vertebrates have backbones. A **backbone** is a group of small bones linked together. Do you know where your backbone is? Look at the picture of a human skeleton below. The shaded part is the backbone. The backbone is part of the internal skeleton called **endoskeleton**. It is called an internal skeleton because it is found inside the body of the animal.



A human skeleton

Let's Try This

If you had fish for lunch or dinner, set aside the intact skeleton of one fish. Wash the skeleton carefully with soapy water then dry. Use a magnifying glass, if you have one, to look at the skeleton. Here's how the skeleton would look under the magnifying glass:



The long column of bones that you see is the backbone. It is also known as the vertebral or spinal column. The bumps along the backbone from which spines stick out are the **vertebrae**. The number of vertebrae corresponds to the number of pairs of spines found along the backbone.

The vertebrae are separated by pads of cartilage. **Cartilage** is a white, tough, elastic and flexible material that is not as hard as bone. It allows the vertebral column to bend.

Let's Learn

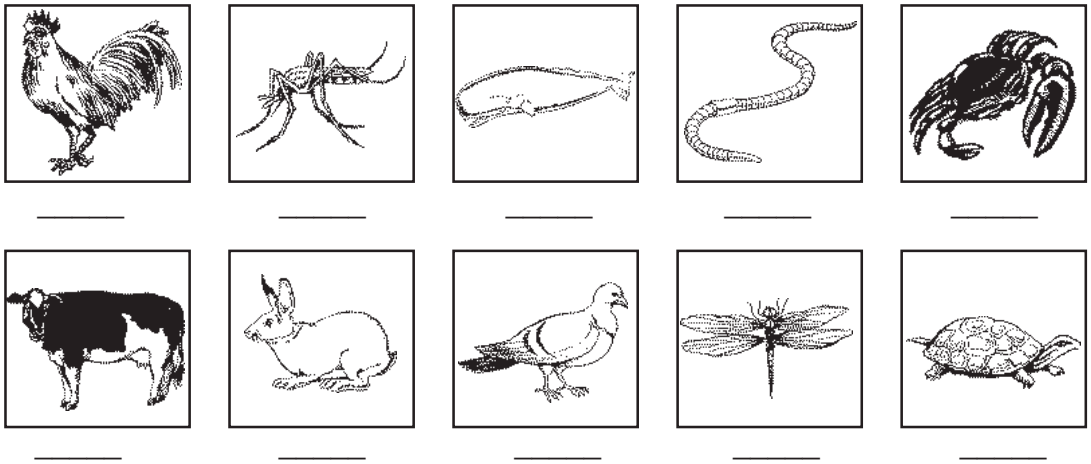
Vertebrates have other characteristics that make them different from other animals. They have a closed circulatory system as opposed to the open circulatory system of other animals. In some insects, for instance, a very simple heart pumps blood out into the tissues of the animal. The blood passes through the tissues and collects again in the heart. On the other hand, vertebrates have a complex heart that pumps blood to all parts of the body.

Vertebrates also have a well-developed nervous system. The nervous system of a vertebrate is made up of the brain, spinal cord and nerve cells. The spinal cord is a bundle of nerves that extends from the base of the brain and is protected by the backbone.

Vertebrates have larger and more developed brains compared to other animals. They also have well-developed sense organs, such as eyes and ears.

Let's Review

Which among the following animals are vertebrates? Put a check on the line below the picture of each vertebrate.



_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

Compare your answers with those in the *Answer Key* on page 47.

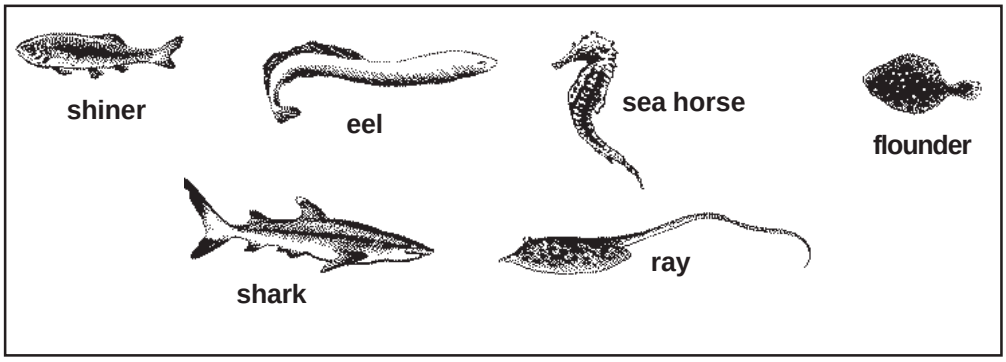
Let's Learn

Sorting the Vertebrates

You found out that humans, fishes, birds, dogs, frogs and snakes are all vertebrates. But this large group of animals is further divided into groups. Thus we have cold-blooded vertebrates and warm-blooded vertebrates. Which group do you think you belong to?

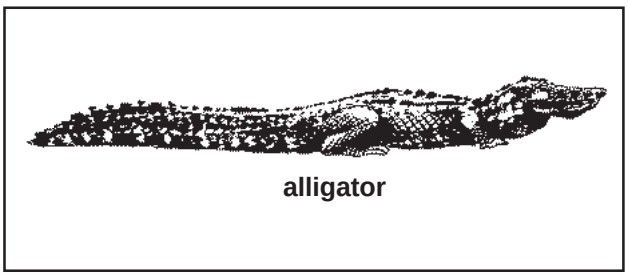
Cold-blooded vertebrates are **ectothermic,** that is, their body temperature changes with the temperature of their environment. Thus, when the environment is cold, these vertebrates become cool as well and when their environment is hot, their body temperature goes up.

Cold-blooded vertebrates include fishes, amphibians and reptiles. Fishes are vertebrates that live in water. They breathe through their gills. The pictures below show some types of fishes.

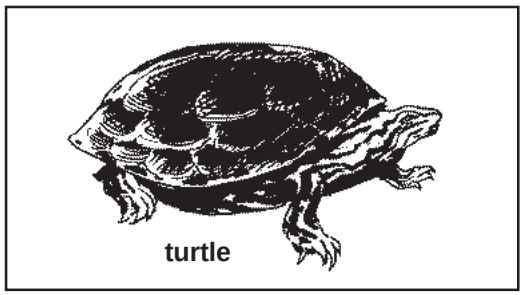


Reptiles are among the oldest organisms to have existed on earth. In fact, scientists believe that reptiles were the first animals on earth. Dinosaurs that lived millions of years ago were reptiles.

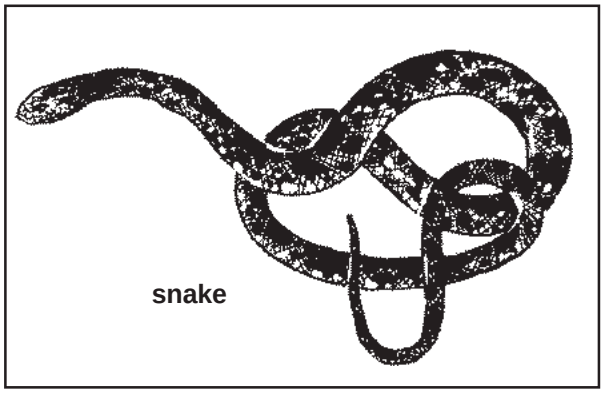
Reptiles have dry scaly skin. Because of this property, their bodies do not dry out as fast as the bodies of other cold-blooded invertebrates. Reptiles are divided into four group—snakes, turtles, crocodiles and lizards. The crocodile group of reptiles includes alligators. **Crocodiles** live in water and have raised nostrils on their snouts that are connected to their lungs.



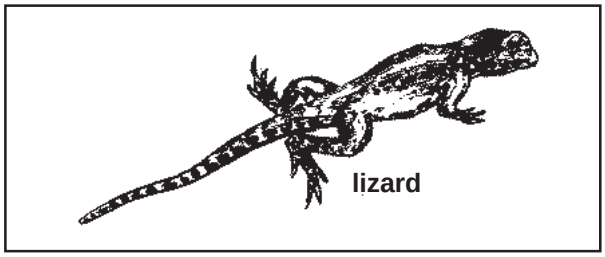
Turtles live in shells that serve as their protection. They have strong, sharp beaks without teeth. There are sea turtles and land turtles or tortoises. The limbs of sea turtles serve as their flippers that help them swim.



Snakes eat other animals for food. Snakes do not have limbs; they do not have ear openings either. They also have unusual jaws that enable them to swallow prey bigger than their mouths.



Most **lizards** have four legs with five clawed toes on each foot. They range in size from 5 centimeters to around 3 meters long and can weigh as much as 140 kilograms.

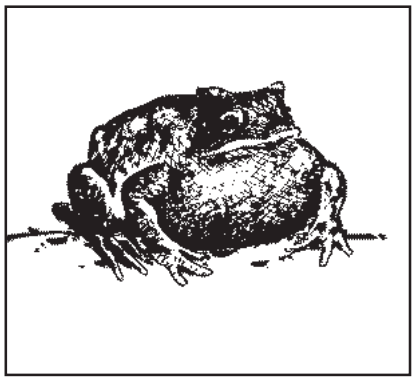


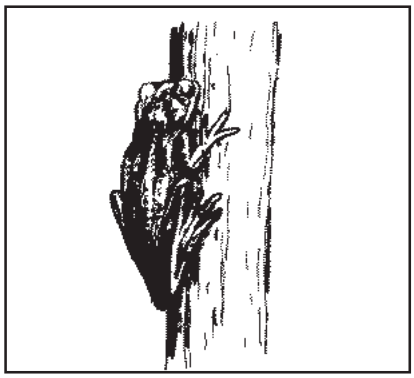
Amphibians are vertebrates that can live both on land and in water. Most amphibians undergo a series of body changes as they develop. These changes enable them to go from a water environment to a land environment.

Amphibians are grouped into those with tails and those with no tails. Amphibians with tails include salamanders and newts. Amphibians without tails include frogs and toads.

Let's Try This

Can you tell the difference between a frog and a toad? Which of the two animals below is a frog? Which is a toad? Write your answers on the lines below the pictures.



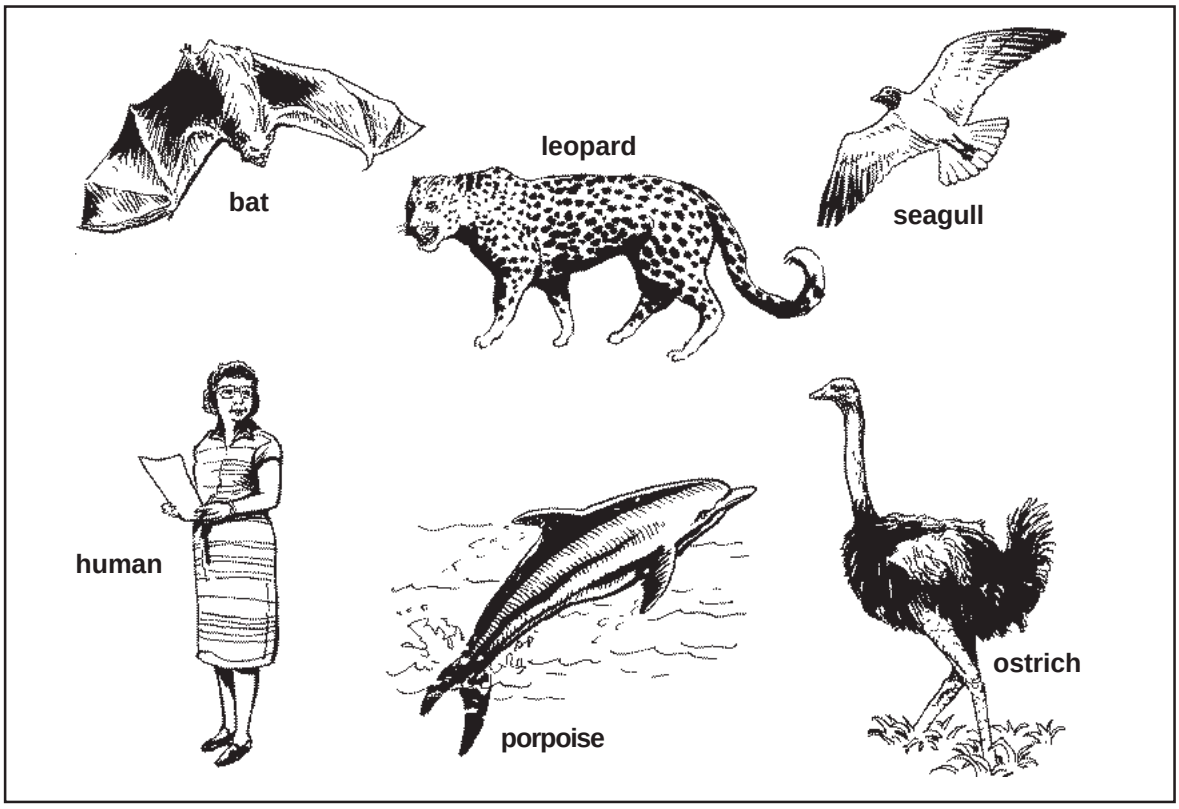


_____ _____

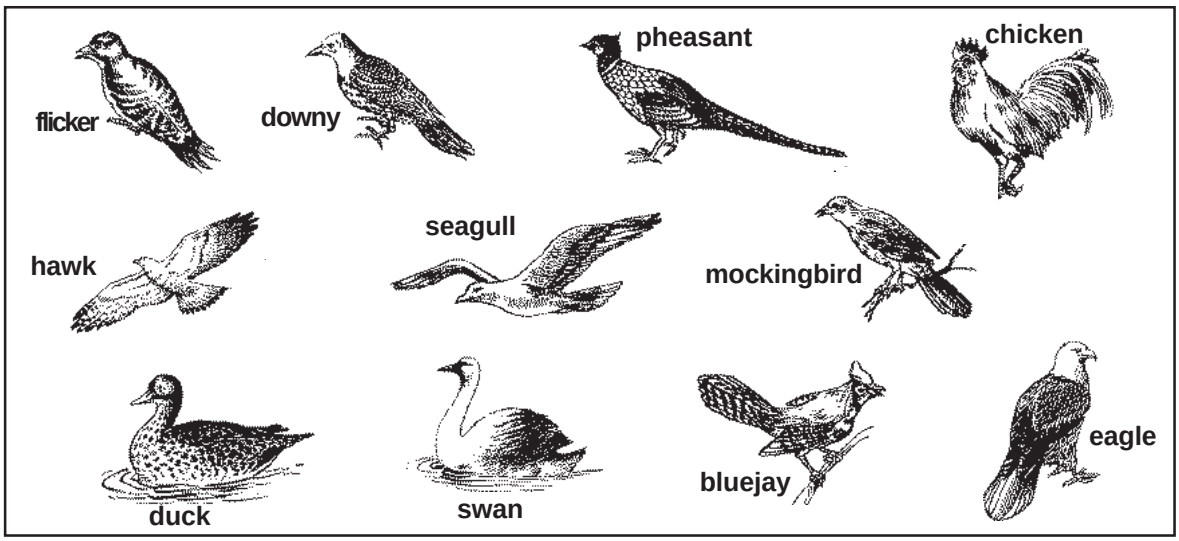
Check if your answers are correct. The animal on the right is a frog and the animal on the left is a toad. Frogs have smooth, moist skins and live in or around water. Toads, on the other hand, have dry, bumpy skins and live on land and return to the water only to reproduce.

Let's Learn

Warm-blooded vertebrates are **endothermic,** that is, their temperature remains constant no matter what the temperature of their environment is. There are two classes of warm-blooded vertebrates—birds and mammals. As you can see from the following pictures, these classes of vertebrates are among those that we commonly see around us.

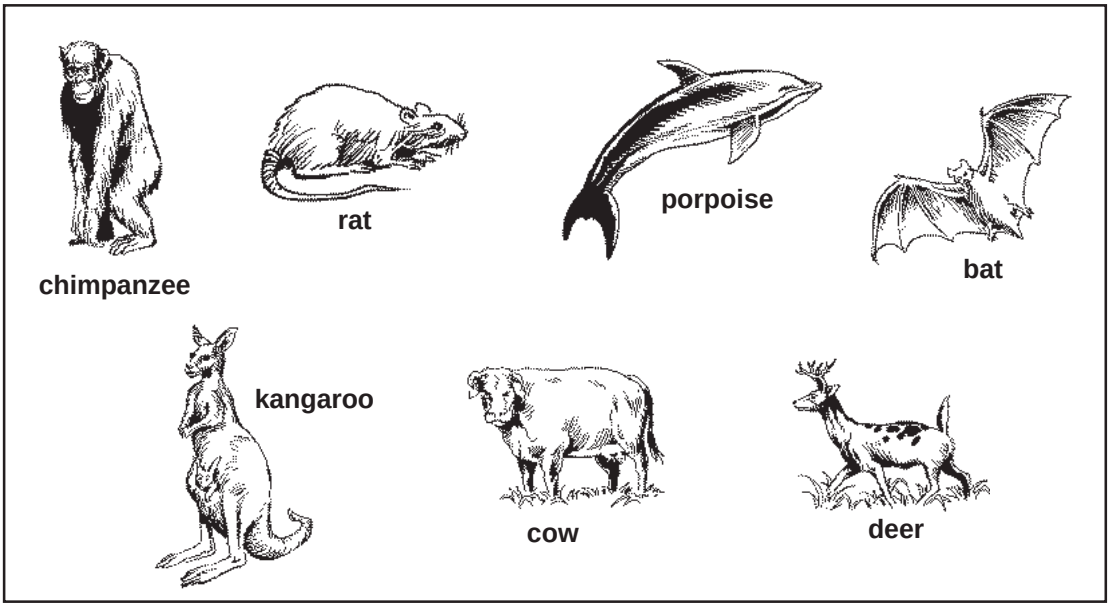


Birds are egg-laying vertebrates whose bodies are covered with feathers and whose forelimbs have been modified into wings. Birds' eggs have hard shells unlike those of snakes, turtles and lizards. Their bones are hollow and light, which makes it easier for them to fly.

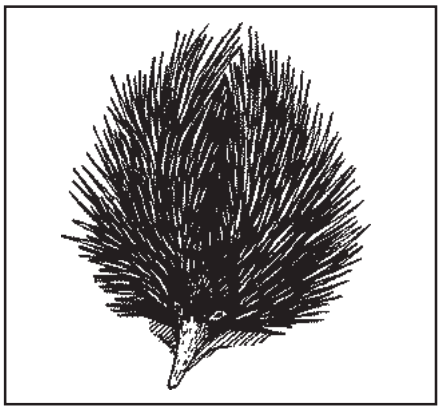


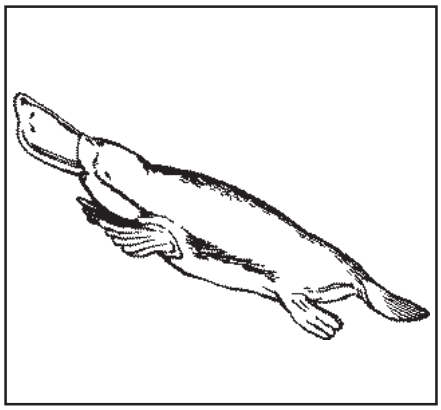
Birds have no teeth. Instead, their food is ground after they have swallowed it. They also swallow small stones that help them grind food. Their feathers protect them against cold and wet and have great strength.

Mammals are a class of vertebrates whose young are nourished with milk from the mothers' mammary glands. What mammals can you identify? Dogs, cats, cows and goats are mammals. So are humans. What other characteristics distinguish mammals from other vertebrates? All mammals (except whales) have hair. Mammals, like birds, have four-chambered hearts. Many mammals can move fast because their legs are more directly under their bodies unlike those of amphibians and reptiles.

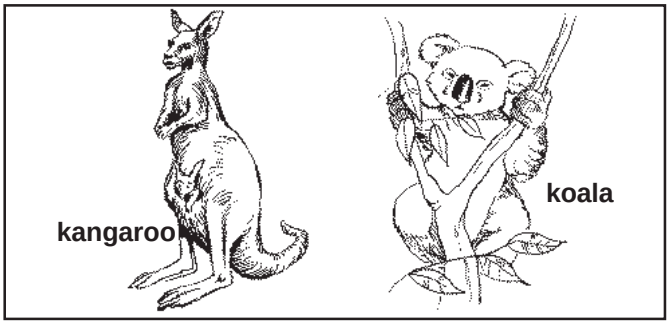


Mammals are divided into three groups—the monotremes, marsupials and placentals. The **monotremes** are egg-laying mammals. There are very few monotremes since most mammals are born, not hatched from eggs. Included in this group are the spiny anteater and duck-billed platypus. They are found in faraway places such as Australia and New Guinea.

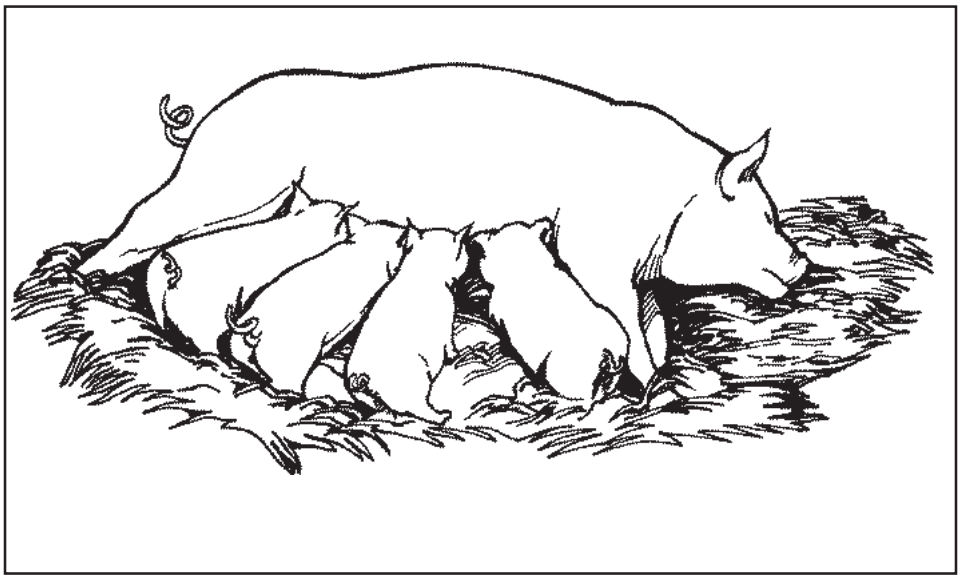

spiny anteater


duck-billed platypus

Marsupials are mammals that develop their young in pouches. Their young are born, not hatched from eggs. Young marsupials develop for only a short time inside their mothers' wombs and when they are born, they are too weak and helpless to be left on their own. Hence, they crawl into their mothers' pouches and attach themselves to the mammary glands of their mothers where they feed until they are strong enough. Do you know any of this type of mammals? Kangaroos are marsupials. So are koalas. Both these animals are found in Australia.



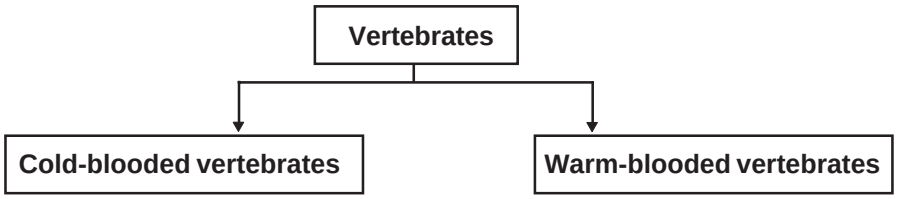
Placentals make up the largest group of mammals. Placentals are mammals that have placentas. The **placenta** is an organ inside the mother's body that allows food and oxygen to pass from the mother's blood into the **embryo,** the developing fetus inside the mother's womb. This allows the young to develop well inside the mother's womb. Hence placentals are much stronger compared to marsupials and monotremes when they come out of their mother's wombs.



Pigs are placentals.

Let's Review

Complete the following schematic diagram that relates the groups of vertebrates to one another. The first part has been done for you.

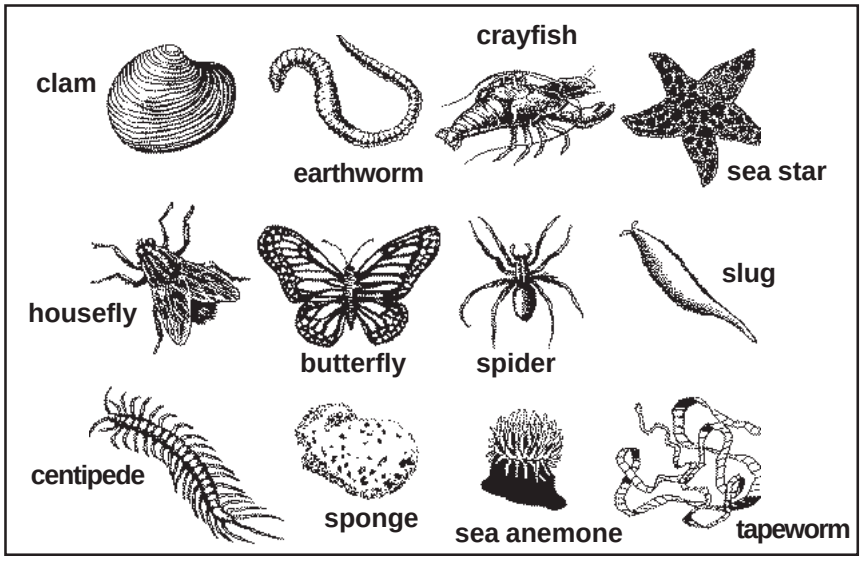


Compare your answers with those in the *Answer Key* on page 47.

Invertebrates

Based on what you learned about vertebrates, can you tell what invertebrates are? **Invertebrates** are animals without backbones. Crabs, spiders and insects are included in this group.

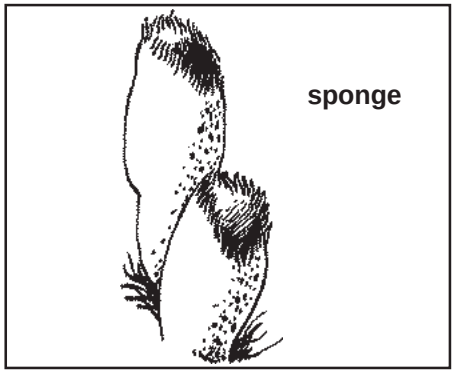
Invertebrates do not have any bones. Most invertebrates don't even have hard coverings. Their bodies are soft inside and out. Some common invertebrates are shown below.



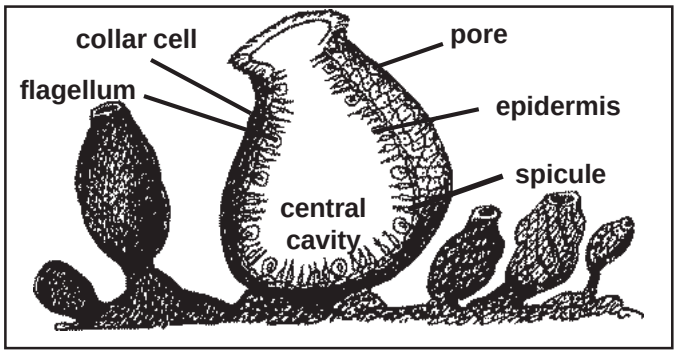
Invertebrates can be divided into two large groups—the simple invertebrates and complex invertebrates. Simple invertebrates are invertebrates that have simple nervous systems and digestive systems. Their skeletal and muscular systems are very primitive or even nonexistent. Complex invertebrates also have simple nervous and digestive systems, but all of them have muscular and skeletal systems.

Among the simple invertebrates are sponges, coelenterates, annelids, flatworms and roundworms.

Did you know that the sponge you use for bathing and washing your dishes is actually an animal? It is a simple invertebrate that is made up of many cells. Look at the picture of a sponge below.

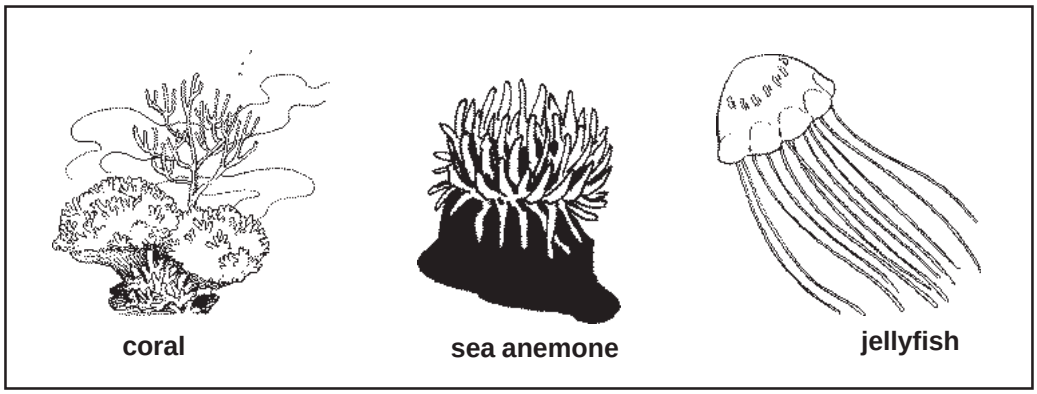


Sponges are found underwater. They live attached to rocks or other objects and do not move from place to place. Despite the absence of mobility, they are able to get food to eat. How do they do this?



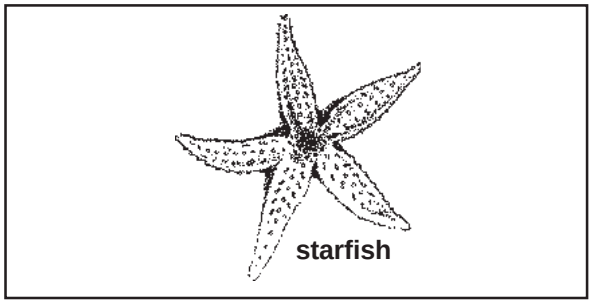
Sponges are made of two layers of cells around a central cavity. The outer layer is the epidermis, which contains many pores. The inner layer is made up of collar cells that have whiplike flagella that wave back and forth, creating water currents. Food particles in the water that move toward the sponge are trapped and digested by the collar cells. Wastes leave through the opening at the top of the central cavity.

Coelenterates also live underwater like the sponges. However, they are more complex than sponges and have cells that are organized into tissues. What coelenterates do you know of? Corals, sea anemones and jellyfish are all coelenterates.



Coelenterates have a digestive cavity. They use snakelike tentacles to move and feed. The tentacles form a ring around the mouth of the animal.

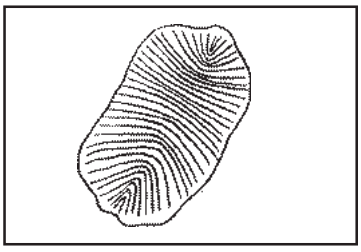
Echinoderms are spiny-skinned invertebrates that live in oceans. Among the characteristics that make echinoderms unique is that their bodies can be divided into five more or less similar portions around a central line. Look at the sea star or starfish in the picture below.



You might see starfish or sea stars on an ocean beach. The arms of a starfish contain suckers that help the starfish move. The starfish uses its arms to break open the shells of a clam that it wants to eat. Once the shells open, the starfish can push its stomach out of its mouth and enter the shells. The stomach can then begin to digest the food.

Flatworms have more complex structures compared to sponges and coelenterates. They are the simplest worms. They have flat bodies with right and left sides. They also have a head, a back end and top and bottom sides. Most flatworms are parasites. They live in or on other organisms for food.

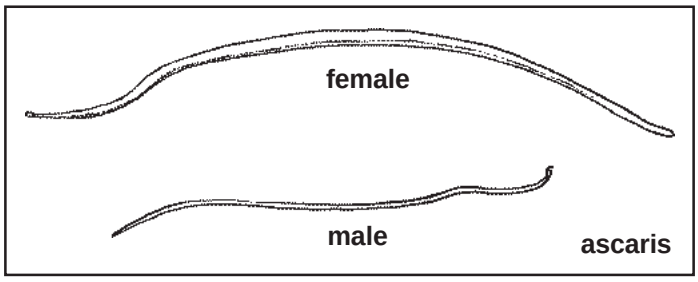
One flatworm that is not a parasite is the planarian, which lives in freshwater. It has sense organs in its head that are sensitive to light and touch and which help it find food. It uses its digestive system to break down food.



Roundworms, on the other hand, have smooth rounded bodies with pointed ends. Some roundworms are so small they cannot be seen by the naked eye; others can grow to be as long as three meters. They are found almost everywhere.

Roundworms are more complex than flatworms. The digestive system of a roundworm is as long as its whole body. The digestive system has two openings, the mouth and the anus.

Many types of roundworms are parasites. One of these is the *Ascaris,* which is found in the digestive tracts of many Filipino children.



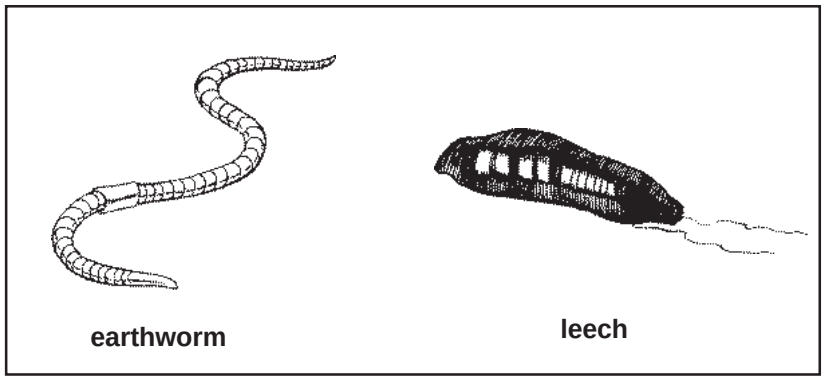
Let's Try This

Go to a nearby beach. If there is no beach near you, look at some pictures of sea animals. Identify as many sea animals as you can. Then identify whether each animal is a sponge, coelenterate or echinoderm. Show your list to your Instructional Manager or Facilitator.

Let's Learn

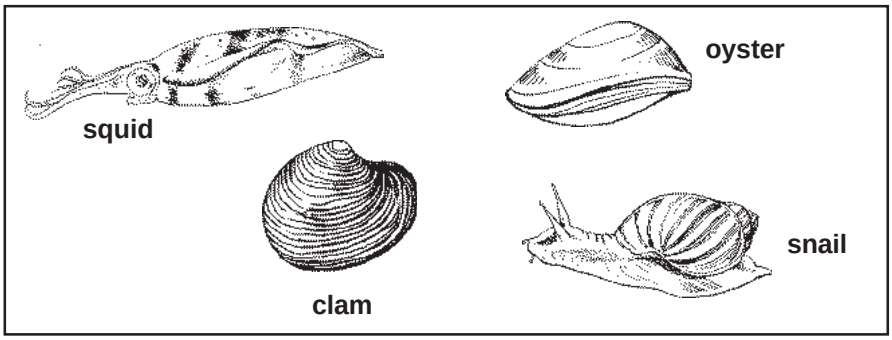
Now it's time for us to learn about complex invertebrates. Included in this group of invertebrates are annelids, mollusks, arthropods and insects.

Annelids are segmented worms. What annelid are you most familiar with? Look at the picture on the next page. What worms do you see in the picture? These are probably organisms that you are very familiar with. These are an earthworm and a leech. Earthworms live in the soil where they get their food. Leeches, on the other hand, are blood-sucking parasites.



The bodies of annelids are divided into segments that specialize in different tasks. Annelid have various organ systems formed from their tissues.

Do you often eat mollusks? You probably find them delicious, as most people do. This group of invertebrates includes shellfish, squid and snail. **Mollusks** have soft bodies that are covered by a fold of tissue called **mantle.** The digestive system of a mollusk is found under its mantle. Mollusks also have a muscular foot that they can use for movement and for capturing prey.



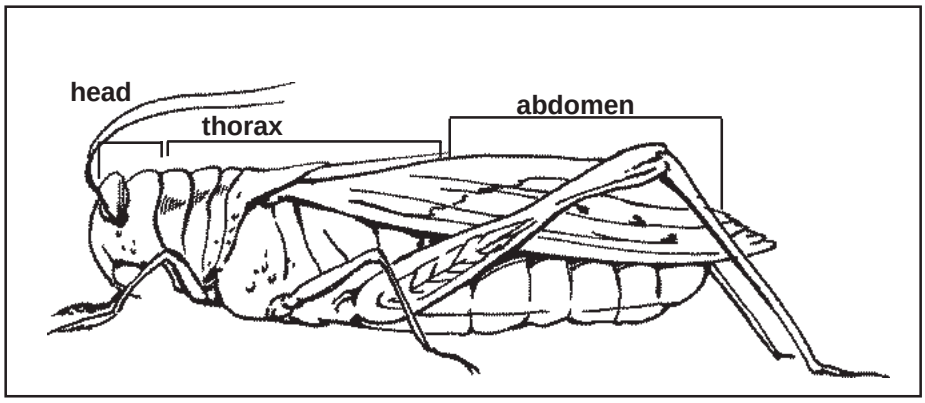
Arthropods make up the largest group of invertebrates. There are almost one million species of arthropods that have been identified so far. All arthropods have jointed legs. There are five groups of arthropods—insects, crustaceans, arachnids, centipedes and millipedes.

Arthropods do not have bones inside their bodies. Instead, they have an exoskeleton, a hard outer covering on the body. This covering gives protection to the arthropod, allows movement and provides a place on which muscles can attach.

Did you know that . . .

. . . the exoskeleton of an arthropod is made up of non-living material? When the animal grows, the exoskeleton does not grow along with it. Thus, when the animal grows it needs to shed its exoskeleton. The shedding is called **molting.**

Insects make up the largest group of arthropods. There have been more than 700,000 insects identified so far. All insects have bodies that are made up of three parts—the abdomen, thorax and head. All insects have six legs attached to their thorax. The head has a pair of antennae and two kinds of eyes—the simple eyes, which are able to detect light and darkness, and the compound eyes, which are able to detect shapes.



The three main parts of the body of an insect

Let's Think About This

Based on your observations of insects around you, why do you think there are so many insects? Write your answer on the lines below.

_____

_____

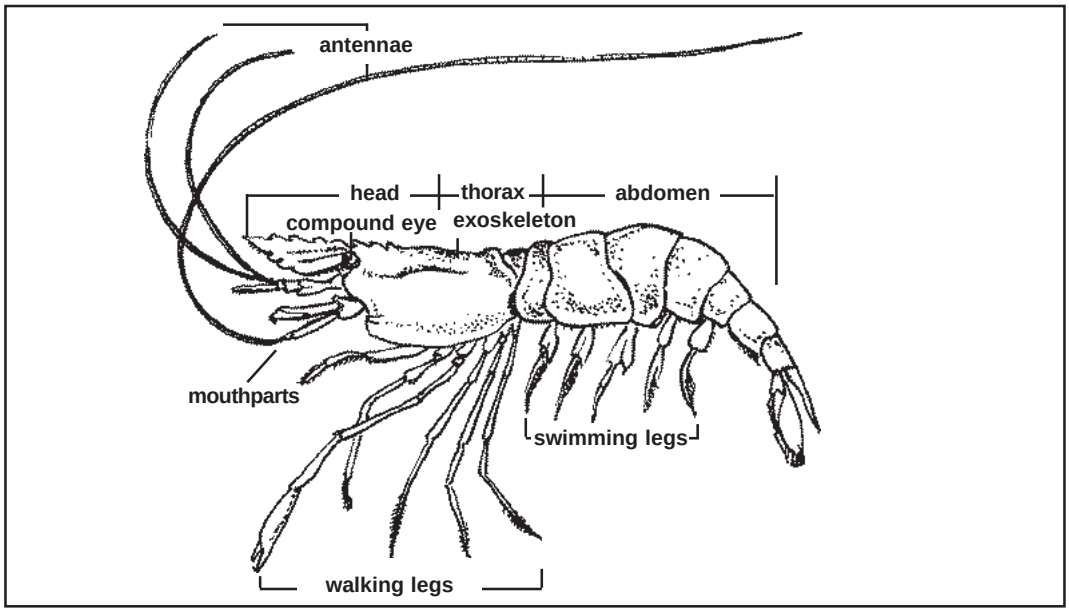
_____

Compare your answer with this:

There are so many insects because they reproduce so quickly. They also produce many, many young. For example, a female housefly can lay as many as 100 eggs at a time. Another possible reason is that insects can thrive in all kinds of environments.

Let's Learn

The **crustaceans** are a group of arthropods that live in the water. Crabs, lobsters and many kinds of shrimp are included in this group.

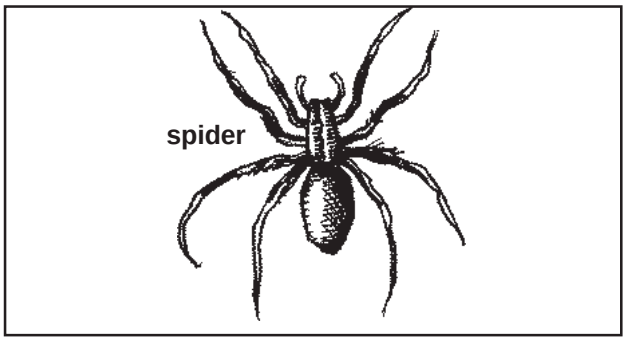


Above is a picture of a shrimp. Its parts are those of a typical crustacean. It has a head with a pair of antennae, an abdomen and a thorax. It also has three pairs of mouthparts, a pair of eyes, a mouth and a pair of jaws. Each segment of the thorax has a pair of legs and the pair closest to the head have pincers that the crustacean uses to catch food and bring it to its mouth. The pincers are also used for fighting and other activities. The legs are used mainly for walking and swimming.

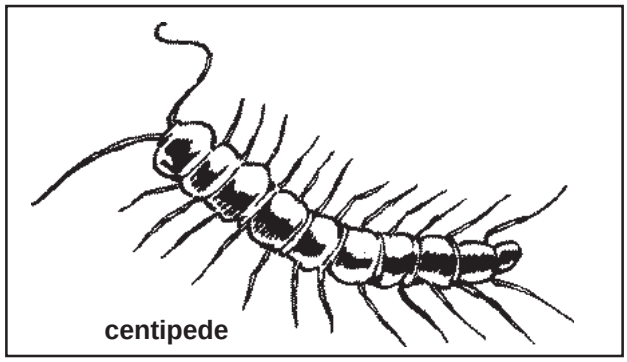
Arachnids include spiders, scorpions, ticks and mites. Most arachnids live on land. Spiders and scorpions live around buildings and under rocks. Ticks and mites live on the surface of the skin of animals and people.

Spiders are helpful to humans because they eat harmful insects. Others, such as scorpions, mites and ticks, are harmful. Scorpions inflict poisonous bites while mites and ticks suck the blood of animals and people and carry poisonous diseases as well.

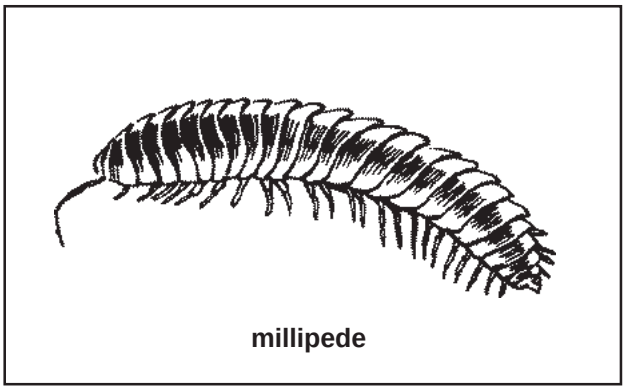
The bodies of arachnids are divided into two main parts, the cephalothorax and abdomen. They have four pairs of legs and do not have any antenna. They can have from one to six pairs of simple eyes. Some are even eyeless. Arachnids do not have compound eyes. Some arachnids breathe through air tubes; others have breathing organs that resemble lungs, called **book lungs.** Most spiders have air tubes and book lungs.



Centipedes are wormlike animals whose bodies are divided into many narrow segments or sections. Each section has a pair of legs. The centipede has a pair of antennae on its head and a pair of jaws. The first pair of legs behind the head serve as fangs and are used for fighting. The centipede's bite is normally painful to people but not deadly.



Millipedes are wormlike, many-legged animals. Some millipedes can have more than 100 pairs of legs. Each segment of the millipede has two pairs of legs. Unlike centipedes, millipedes feed mainly on plants and live in dark, damp places. They are also much slower than centipedes.



Let's Review

Based on what you have learned about arthropods, can you tell the similarities and differences between the five groups of arthropods? Fill up the table below.

Arthropod Groups	Similarities

Compare your answers with those in the *Answer Key* on page 48.

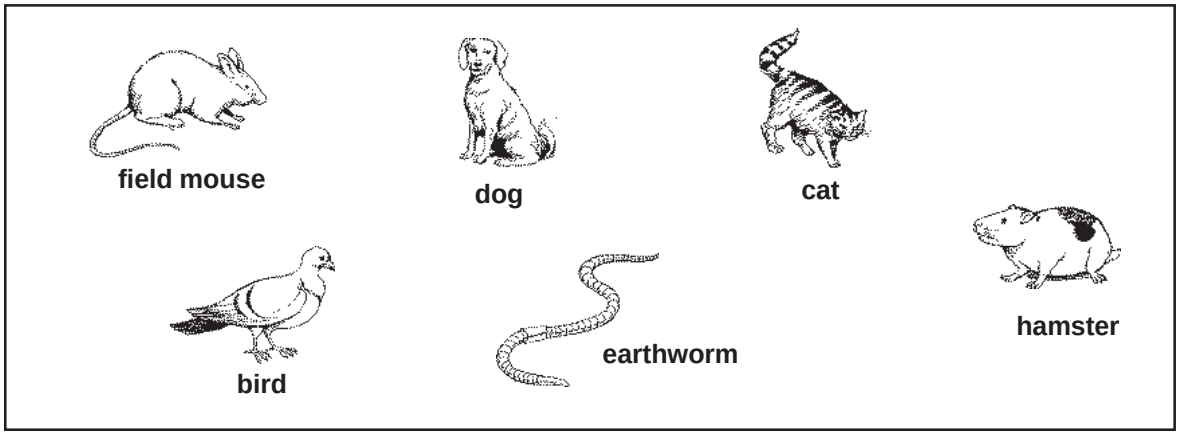
Let's Learn

Classifying Animals According to Habitat

We can also classify animals according to where they live. The place where an animal lives is its habitat. Based on habitat, animals can be divided into two groups—terrestrial animals and aquatic animals.

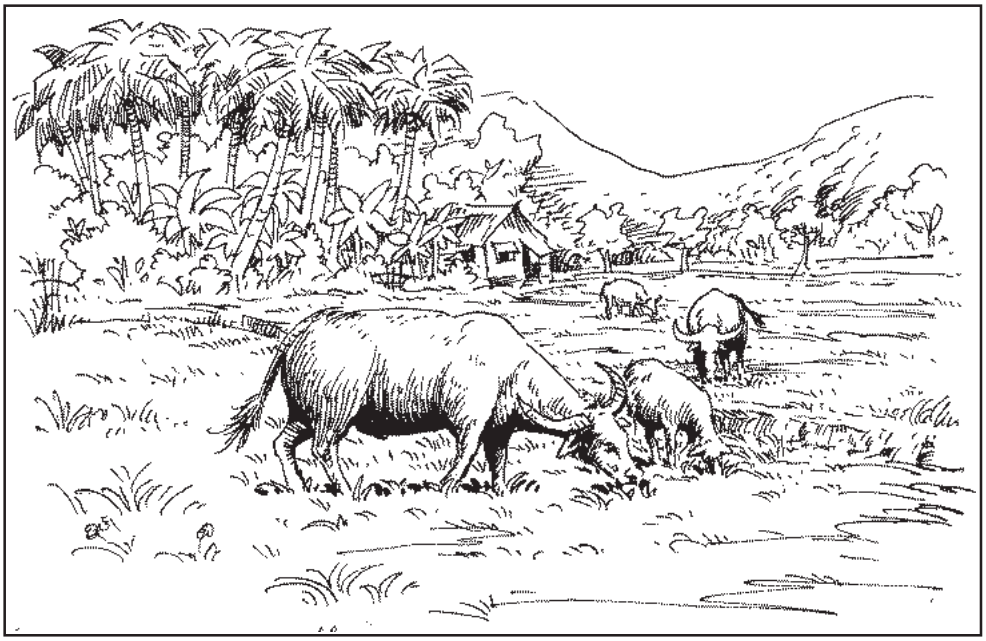
Terrestrial Animals

Terrestrial animals are animals that live on land. The animals in the picture below are all terrestrial animals. Can you tell why?



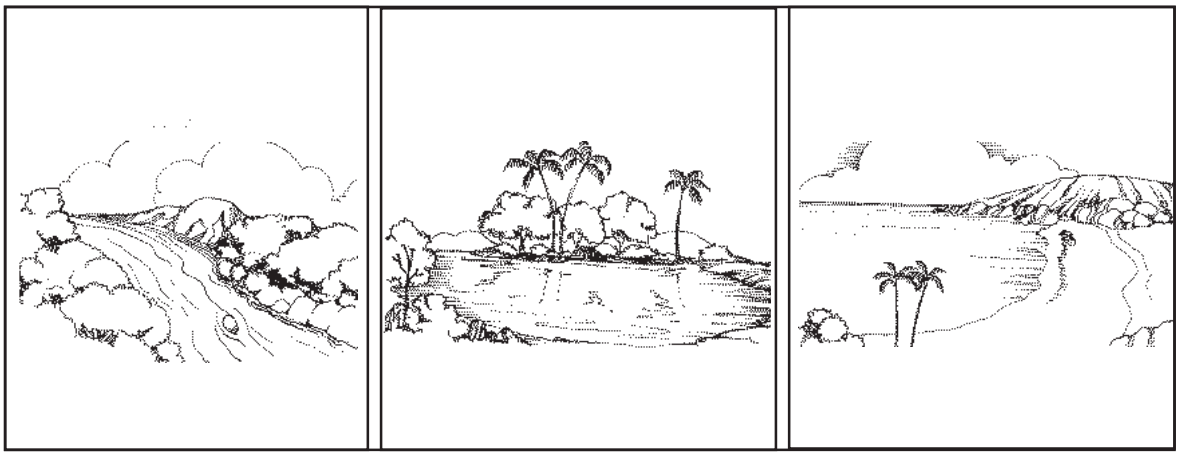
A field mouse lives in a rice field. A dog, cat and hamster live in a house. A bird lives on a tree. An earthworm lives in the soil.

All animals that live in rice fields, houses, soil and in trees are terrestrial animals.



Aquatic Animals

Aquatic animals are animals that live in water. What aquatic animals can you name? Animals that live in bodies of water—rivers, lakes, ponds, seas, oceans—are aquatic animals. Look at the different bodies of water in the following pictures. Can you think of animals that live in each body of water?



river **lake** **sea**

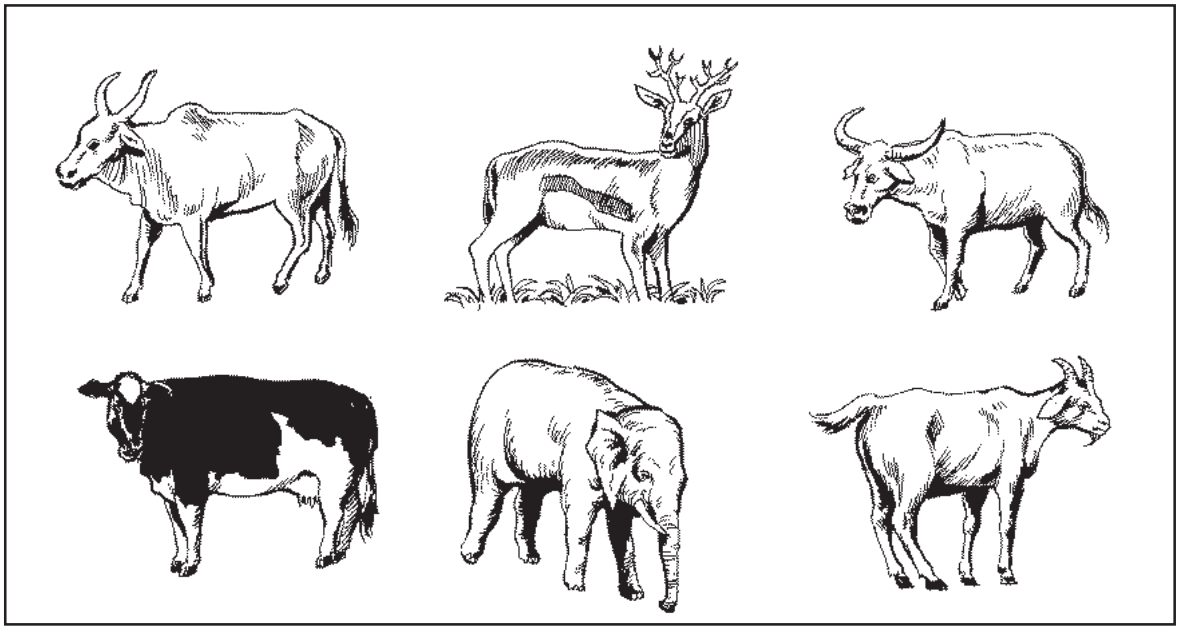
Classifying Animals According to Food Eaten

What foods do you eat? Do you eat the same food that a rabbit or a fish would eat?

Because of the differences in the food animals eat, we also classify animals into herbivores, carnivores and omnivores.

Herbivores

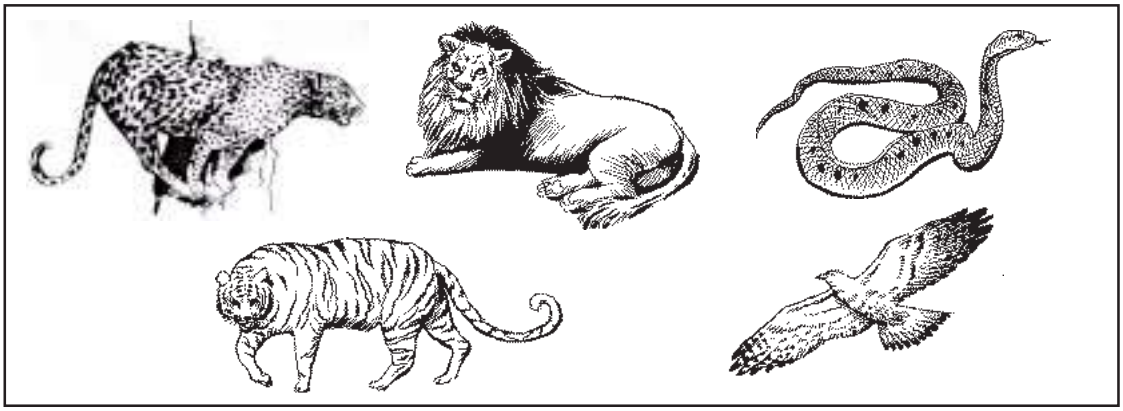
Animals that eat only plants are called **herbivores.** Carabaos, cows, goats and elephants are herbivores. Can you name some other herbivores?



Herbivores are plant-eating animals.

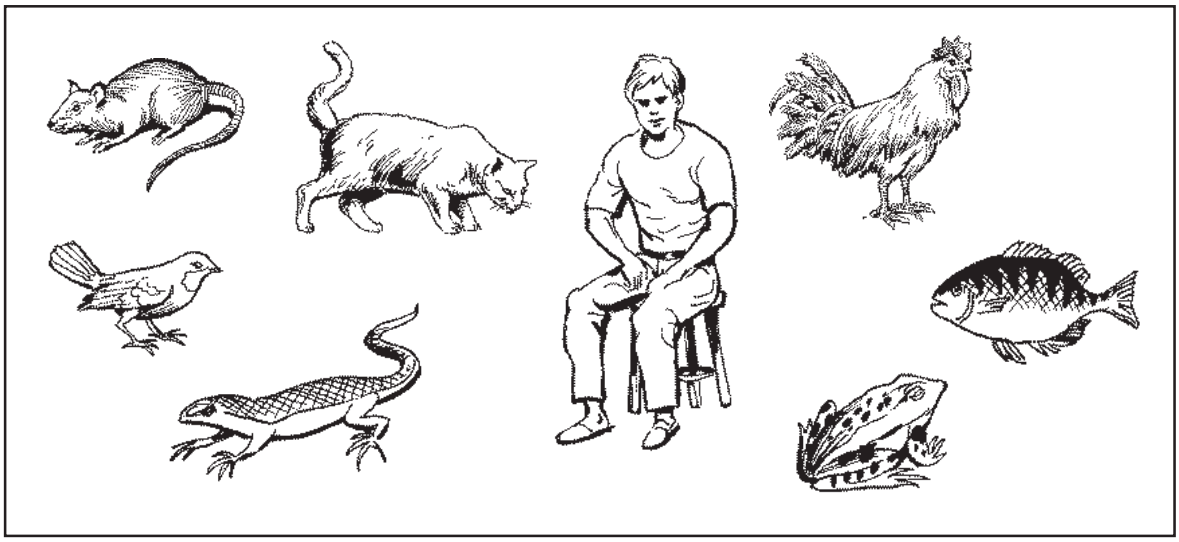
Carnivores

Animals that eat other animals are called carnivores. Tigers, lions, leopards, snakes and hawks are carnivores. Can you name some other carnivores?



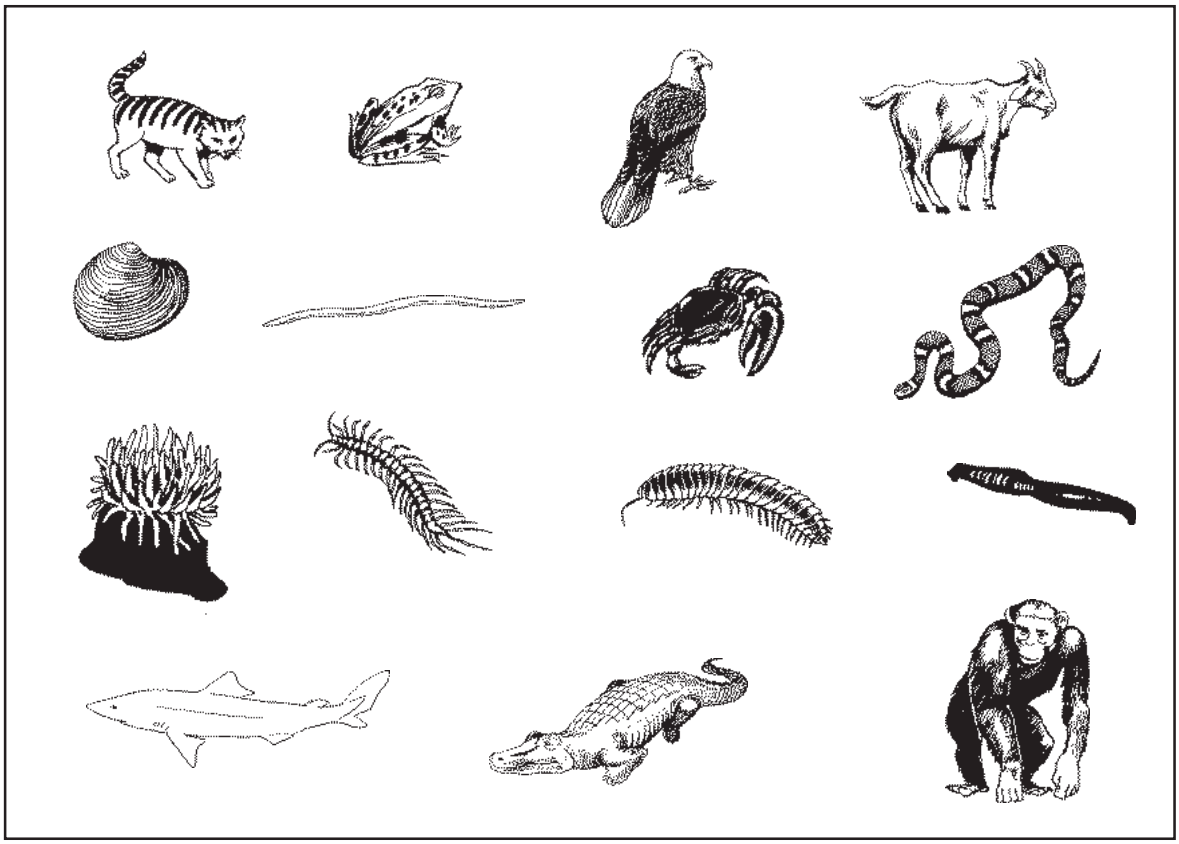
Omnivores

Animals that eat both plants and other animals are called **omnivores.** Rats, chickens, and humans are omnivores.



Let's See What You Have Learned

Group each of the animals in the box based on the three categories of classification. The first item has been done for you.



According to Structure	
Vertebrate	
cat	

According to Habitat	
Aquatic	
	cat

According to Food Ea	
Herbivore	**Carnivore**

Compare your answers with those in the *Answer Key* on page 48. Did you get everything right? If you did, that's very good! You may proceed to the next lesson. If you did not get everything right, that's okay. Review the parts you did not understand. Afterward, you may move on to the next lesson.

Let's Remember

- Animals are found everywhere, in homes and in communities.
- Animals can be classified according to different categories, namely, structure and size, habitat and food eaten.
- Based on structure and size, there are two kinds of animals—the vertebrates and invertebrates. Vertebrates are animals with backbones, while invertebrates are animals with no backbones.
- Based on habitat, animals can be divided into terrestrial animals and aquatic animals. In between are the amphibians, which can live both on land and in water.
- Based on food eaten, there are three groups of animals—the plant-eating herbivores, the meat-eating carnivores and plant- and meat-eating omnivores.

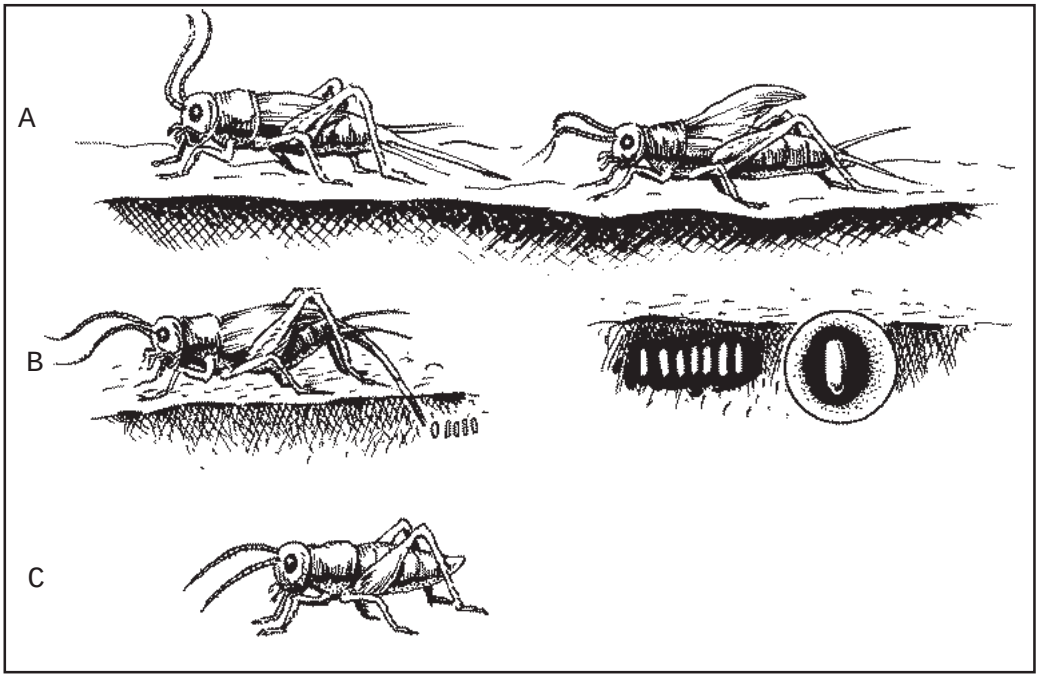
Life Cycles

Have you seen butterflies hovering from one flower to another? Isn't it fun to watch colorful butterflies flit from one flower to another? Will these butterflies come again next month? next year? Where do butterflies come from?

These and more questions will be answered in this lesson. You will find out about the processes of reproduction among different types of animals. You will learn about the life cycles of some animals. Are you ready to learn more? Read on!

Let's Try This

Have you heard crickets singing outdoors? Look at the following diagram. Can you tell a story for figures A, B and C?



Write your short story here.

_____

_____

_____

_____

Let's compare your story with this:

In A, the male cricket is courting the female cricket. It is singing a song to attract the female. You can tell that it is singing because its wings are raised.

In B, you can see that the two crickets have mated and that the female is now laying eggs.

In C, a young cricket has already hatched from one of the eggs.

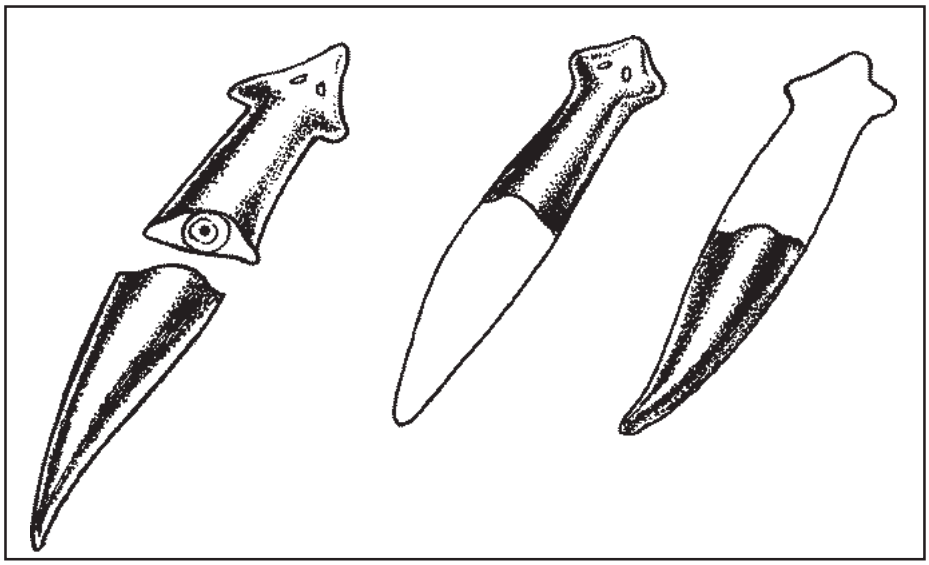
When a cricket has completed these stages, it has gone through a life cycle. A **life cycle** is all the stages in the life of a living thing.

Let's Learn

Before we discuss the life cycles of animals, let us first try to understand the concept of reproduction among animals. **Reproduction** is the capacity of organisms to produce other organisms similar to themselves. Hence, cats give birth to cats, dogs give birth to dogs, humans give birth to humans. There are two types of reproduction—asexual reproduction and sexual reproduction.

In **asexual reproduction,** a single organism divides to produce two or more offspring. Among animals, there are two types of asexual reproduction — budding and regeneration. In budding, a new organism grows from the original organism. The bud produced is smaller than the original organism. One animal that undergoes budding is the *Hydra*, a coelenterate.

In regeneration, an entire new organism grows from certain pieces or cells of the original organism. This type of reproduction occurs among almost all coelenterates and planarians, most annelids and many insects. If you were to cut a planarian widthwise in half, each half would grow a new half.



Planarian regeneration

Regeneration also occurs partially among other animals, such as lizards, salamanders and young frogs and toads. Have you seen a lizard with its tail cut off? The next time you see that lizard, it will probably have grown a new tail already.

Sexual reproduction occurs when two specialized cells meet and join together to form a new cell **(zygote)** that develops into a new organism. Most animals reproduce in this manner: sperm from the male animal and egg cell from the female animal join together and form the zygote. Planarians and earthworms, however, have both testes and ovaries in their bodies. Thus, when mating, one worm donates sperm to another worm and both worms produce eggs.

Let's Review

What is required for sexual reproduction to take place?

_____

_____

_____

_____

Compare your answers with those in the *Answer Key* on page 49.

Let's Learn

Do you know what the term **life cycle** means? **Life cycle** refers to the series of stages that an organism undergoes as it passes from the time it starts to develop to the time it begins to reproduce. A life cycle is also known as a **generation.**

Can you describe where your life cycle started? Your life cycle started when you were born. Once you have your own child, your child's own life cycle begins. The average human life cycle is 30 years.

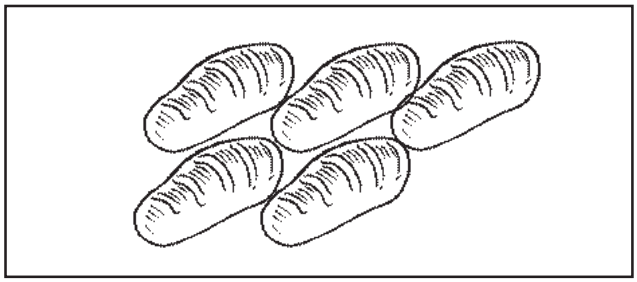
The life cycles of some organisms are more complex. Let us study these unique life cycles one by one.

Let's Try This

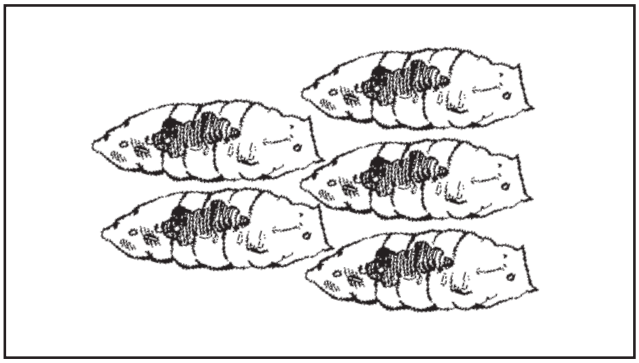
Here's one way you can study the life cycle of the fruit fly. Get some cornmeal and cook it. When it is nearly cool, stir in a little yeast. Then put this mixture into some small jars. Let it cool and harden.

Place some ripe fruits near an open window. After a while, some little flies will gather on the fruits. Catch some of these flies. Put them in the jars with the cornmeal mixture. Cover the openings of the jars with pieces of cloth. Fasten each piece of cloth with rubber bands. Put the jars in a warm place. Wait and see what happens.

The female fruit flies will lay some tiny eggs. They are very hard to see. If you could see them, they would look like these:



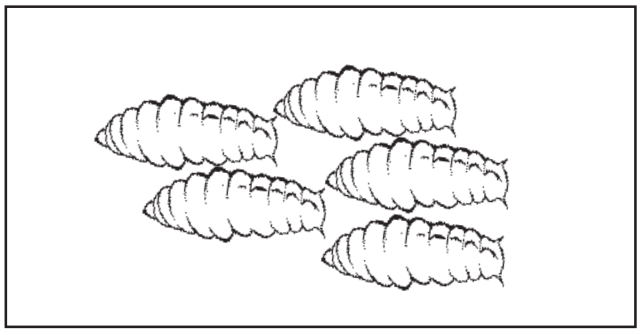
After a week, some tiny larvae will hatch from the eggs. Look at each larva with a magnifying glass. What do you see?



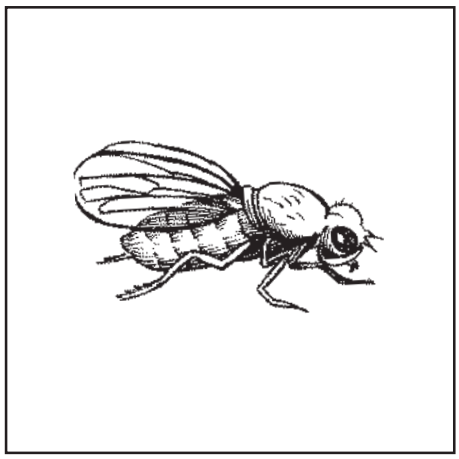
Watch the larvae for several days. They will keep eating and growing. The larvae will crawl along the sides of the jars and on the fruit.

What happened after about 10 days? Have the larvae disappeared? Can you find some new things on the sides of the jars? Some of the larvae have become pupae.

The pupae look like these:



A pupa can't move. It has no legs. It is just a brown case. But inside, something happens. You won't be able to tell just by looking. But wait for a week or so. An adult fly will come out of each brown case. The fly will look like this:



Let's Think About This

You watched the different stages of the life cycle of a fruit fly.

1. How many stages did you observe in the life cycle of the fruit fly?

   _____

2. Does the life cycle of the fruit fly have a beginning and an end? Why?

   _____

   _____

   _____

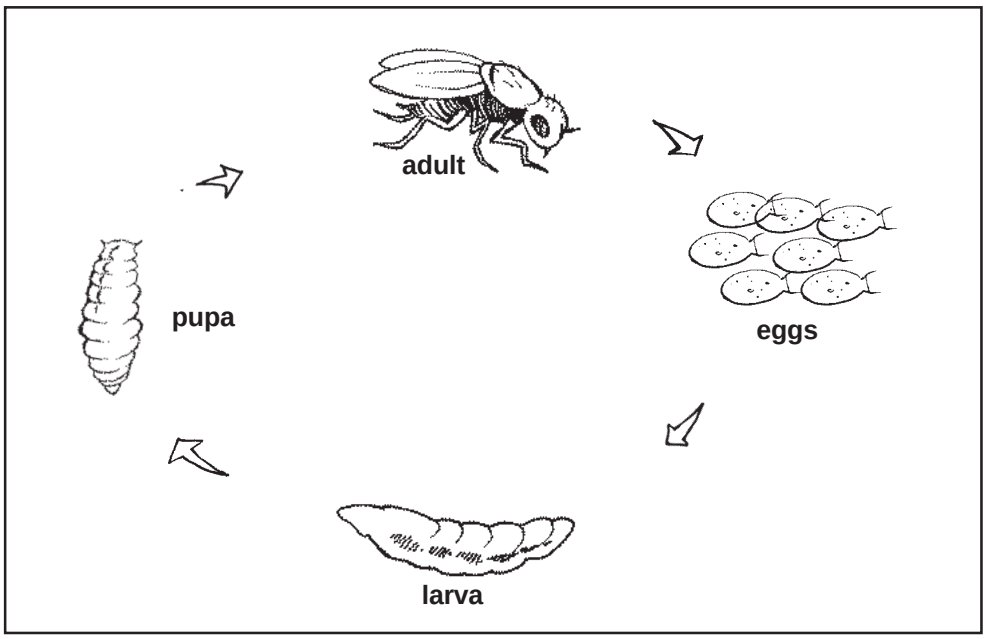
   _____

   _____

Compare your answers with those in the *Answer Key* on page 49.

Let's Learn

Life Cycle of a Fruit Fly



Life cycle of a fruit fly

A cycle is something that happens over and over again. The life cycle of any species repeats itself over and over.

As you can see from the diagram above, the life cycle of a fruit fly has four stages. In the first stage, the adult fly lays eggs. The yolk inside each egg hatches by chewing its way through the egg.

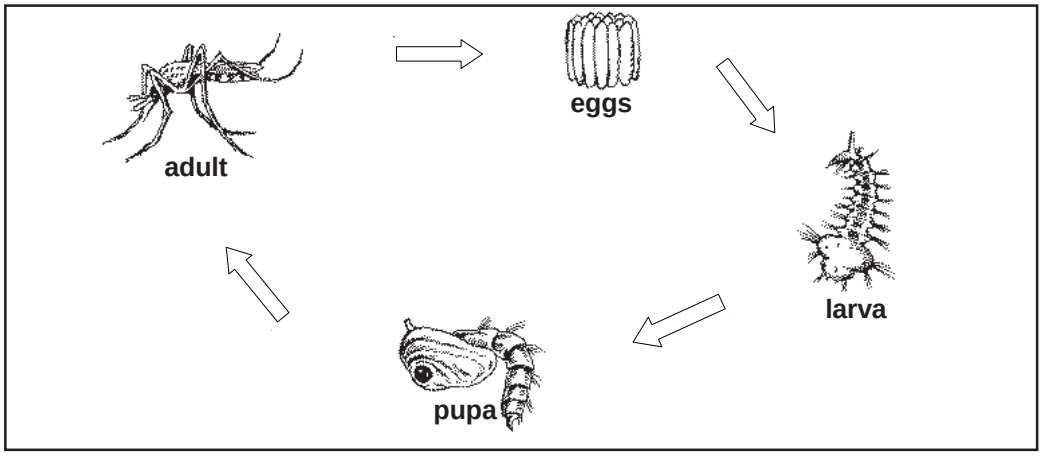
The second stage is the larval stage. The fruit fly larva is called a **maggot.** The maggot has mouth hooks by which it drags itself through its food.

The third stage is the pupal stage. The maggot wraps itself in a case and there it grows larger and develops body parts.

The fourth stage is the adult stage. The fly as you often see it emerges from the case. At this stage, the fly is ready to lay eggs. Hence, the cycle repeats itself.

Life Cycle of a Mosquito

Have you ever been bitten by a mosquito? What are the stages of the life cycle of a mosquito? Look at the following diagram.

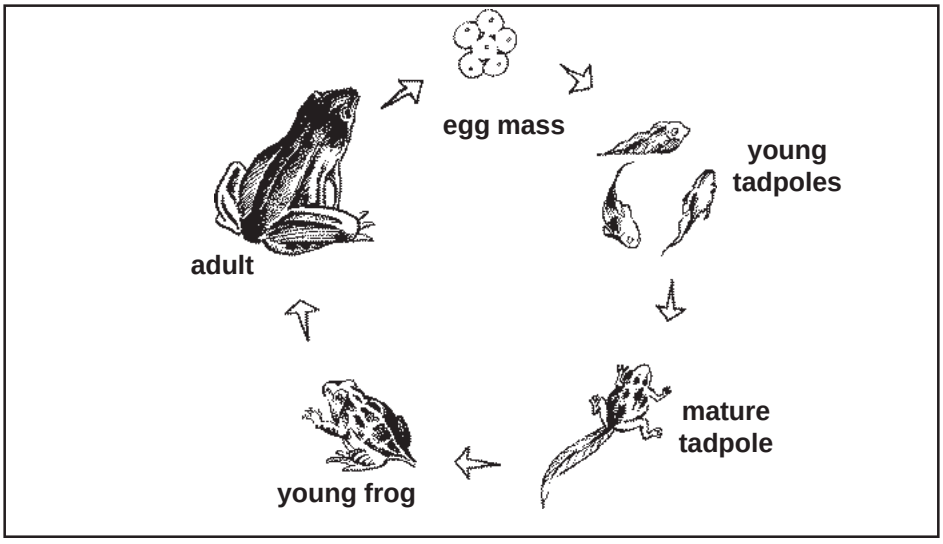


Life cycle of a mosquito

As you can see from the diagram, the life cycle of a mosquito resembles that of a fruit fly. It also has four stages—the egg, larval, pupal and adult stages. Mosquitoes lay their eggs in water. The larva that hatches from an egg spends the entire stage in water where it feeds on tiny organisms. The larva is the wriggler or *kitikiti* that you often see in stagnant water. The pupa of the mosquito does not feed but it is extremely active. Once the adult emerges from the pupa case, it becomes a terrestrial animal.

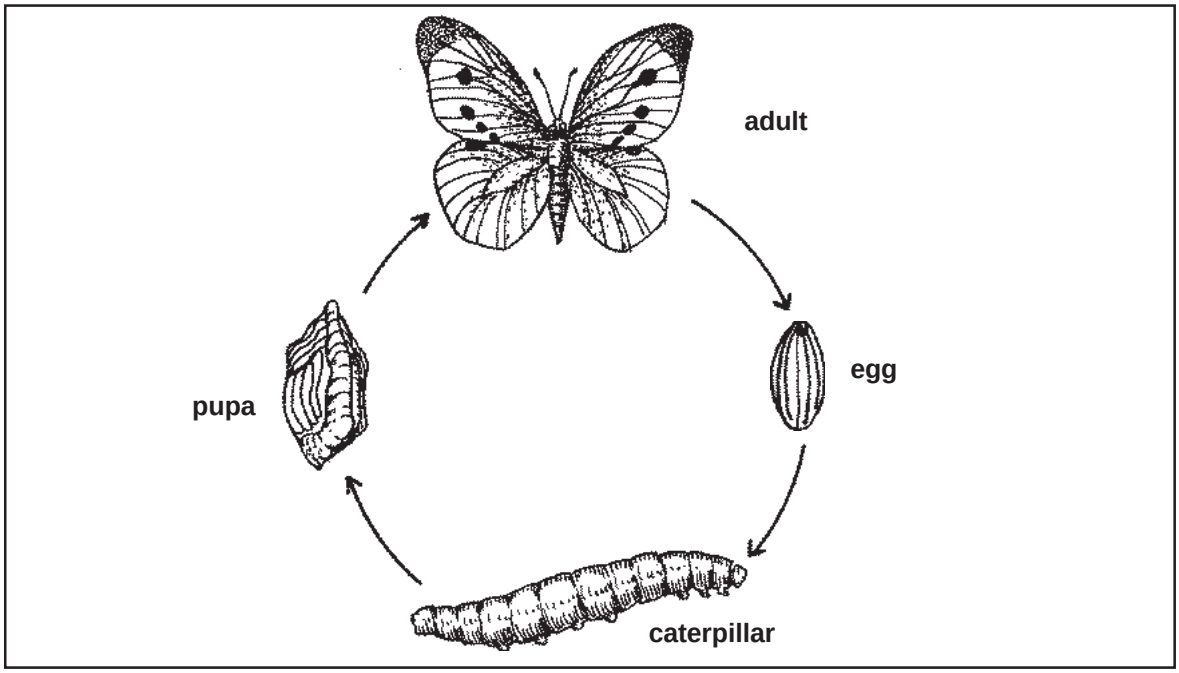
Life Cycle of a Frog

Most frogs and toads and other amphibians lay their eggs in water. Some female frogs can lay as many as thousands of eggs. Amphibian eggs have jelly around them, but they do not have shells. Hence, they need to be in water all the time. The frog larva is called a **tadpole.** A tadpole has gills and a tail. It takes about a year for the tadpole to develop into an adult frog. During the rainy season, you may be able to find tadpoles in a lake or stream. If you can find some, catch a few in a strainer and put them in a large container. Keep them in your house and watch them grow. You can feed them some vegetables and insects twice a week.



Life cycle of a frog

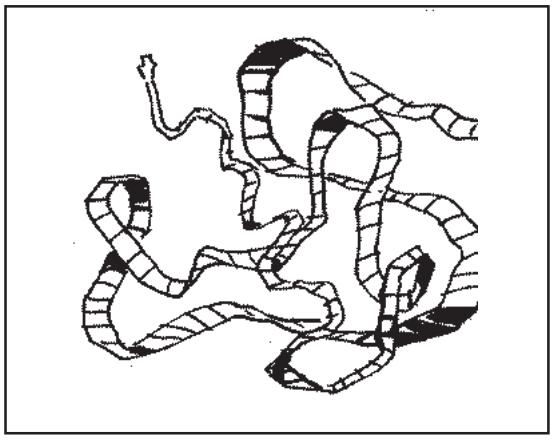
Life Cycle of a Butterfly



Do you like butterflies? A lot of people enjoy the sight of these colorful creatures flitting from one flower to another. The butterfly also undergoes four stages of development. The adult butterfly lays an egg on the leaf of a plant. The larva that hatches from the egg is called **caterpillar.** The caterpillar is the green worm that you often see crawling on leaves. It usually has a big appetite. The next stage is the pupa stage. The caterpillar covers itself in a shell. Inside the shell, it transforms into an adult. The adult emerges from the shell. This is the butterfly that you see and admire.

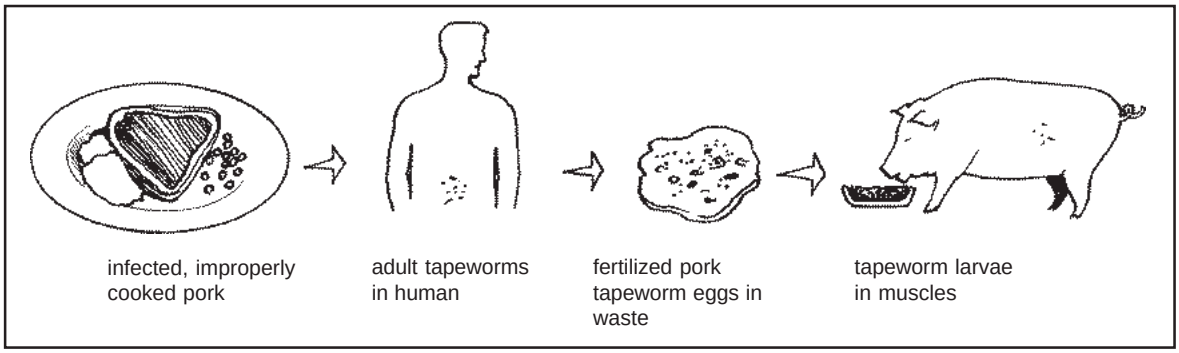
Life Cycle of a Tapeworm

Look at the picture of a pork tapeworm below. What group of animals do you think the pork tapeworm belongs to?



A tapeworm

The pork tapeworm is a flatworm. It is a parasite that lives in human and pig intestines. The life cycle of this tapeworm begins when a person eats infected, improperly cooked pork. The tapeworms in the pork reach the human intestines and lay eggs there. The fertilized eggs are released along with human waste. A pig becomes infected with the tapeworm when it eats food that is contaminated with tapeworm eggs. The fertilized eggs develop into larvae. These larvae settle in the muscles of the pig. Once a human eats the infected pork, the life cycle is repeated.



Pork tapeworm life cycle

Let's Try This

Try naming the stages in the life cycle of each of the following animals:

1. chicken
2. dog
3. human being

Compare your answers with those in the *Answer Key* on page 49.

Let's See What You Have Learned

Identify what is being described. Write your answer on the line before the number.

_____ 1. the capacity of an organism to produce other organisms similar to itself

_____ 2. a type of asexual reproduction that the *Hydra* undergoes

_____ 3. a type of reproduction where the sperm and egg cells of two organisms meet and form a new cell

_____ 4. the series of stages that an organism undergoes as it passes from the time it starts to develop to the time it begins to reproduce

_____ 5. another term for life cycle

_____ 6. the first stage in the life cycle of a mosquito

_____ 7. the larva of a frog

_____ 8. another name for the larva of a butterfly

_____ 9. the site where a tapeworm lays eggs

_____ 10. the stage where the larva wraps itself in a case

Compare your answers with those in the *Answer Key* on page 49. Did you get a perfect score? If you did, that's very good. That means you understood this lesson well. If you did not get a perfect score, that's okay. Study again the items that you missed. Afterward, you may proceed to the next lesson.

Let's Remember

- Reproduction is the capacity of an organism to produce other organisms similar to itself.
- Reproduction may either be asexual or sexual. Asexual reproduction is undergone usually by simple animals, such as sponges and coelenterates. Sexual reproduction is undergone by more complex animals, including humans.
- The life cycle of an animal refers to the stages it undergoes as it passes from the time it begins to develop to the time it begins to reproduce.
- The stages in the life cycles of different animals vary.

Animals Are Our Friends

Are there many kinds of animals in your home and in your community? Are they helpful to you and your neighbors?

This lesson will help you understand how important animals are to us human beings. It will also describe ways by which you can take care of these animals. Are you ready for this lesson? Read on!

Let's Try This

Think of any three animals that you know of. Name the benefits you derive from these animals. Write your answers on the following lines.

_____

_____

_____

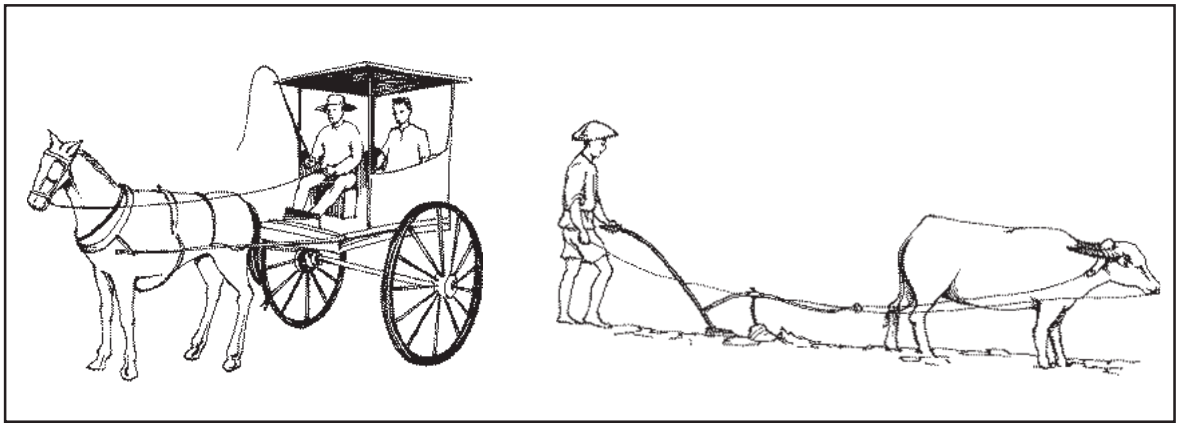
_____

Compare your answers with those in the *Answer Key* on page 49.

Let's Learn

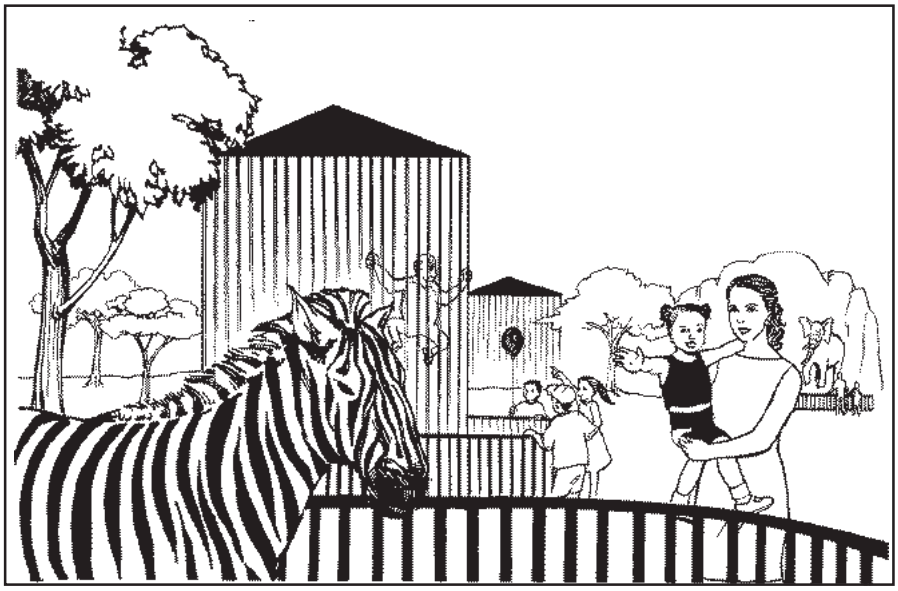
Animals are valuable to us people. They help us in many ways. Let us name the ways by which animals help us.

Animals help us in our work.



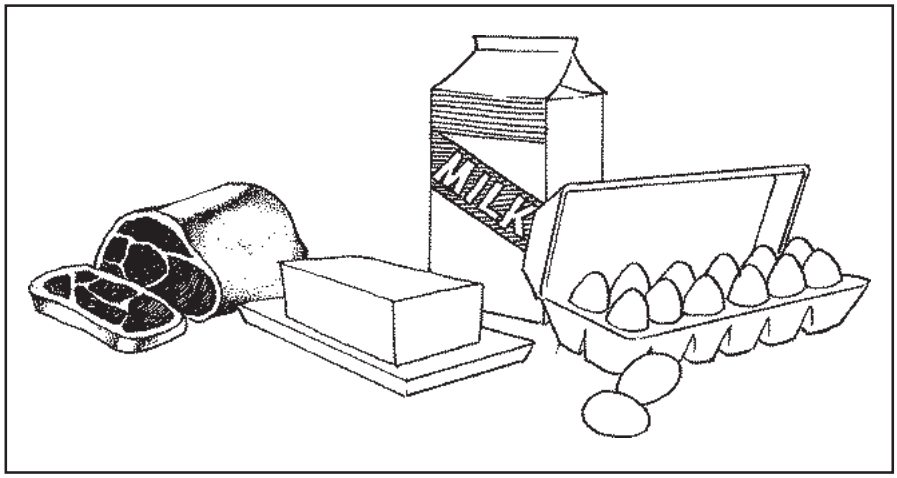
Do you know how animals help us in our work? Carabaos help farmers plow the fields. Horses serve as a means of transportation in some places. Do you know of any animals in your community that help people do their work?

Animals are a source of enjoyment.



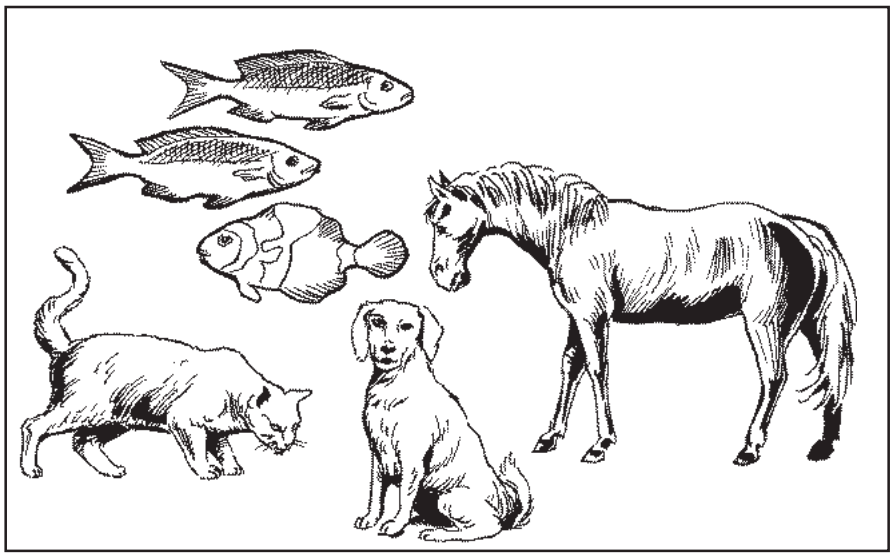
There are so many beautiful animals around you. Butterflies, birds, dragonflies, cats and dogs are just some of them. We enjoy the sight of these animals around us. A lot of people go to zoos to watch different kinds of animals. In a zoo, you can find exotic creatures such as lions, snakes, giraffes, elephants and crocodiles. Adults and children alike derive pleasure from looking at these beautiful animals.

Animals are a source of food.



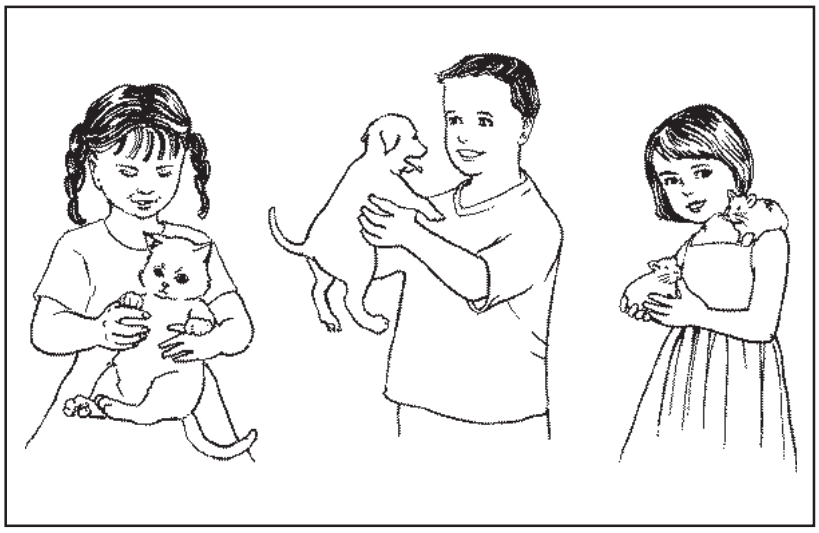
What did you just have for lunch? You probably had meat or fish. Animals give us food. Cows, pigs and chickens give us meat. We also eat fish and shellfish. We also eat chicken and duck eggs. We drink milk and eat cheese that come from cows and carabaos.

Animals serve as a source of income.



Some people breed animals for a living. They raise horses, cattle, dogs, cats and fishes and sell these. Some people use the skins of some animals as raw materials for various products. For example, the hides of carabaos and cows are made into leather, which is used to make shoes and bags.

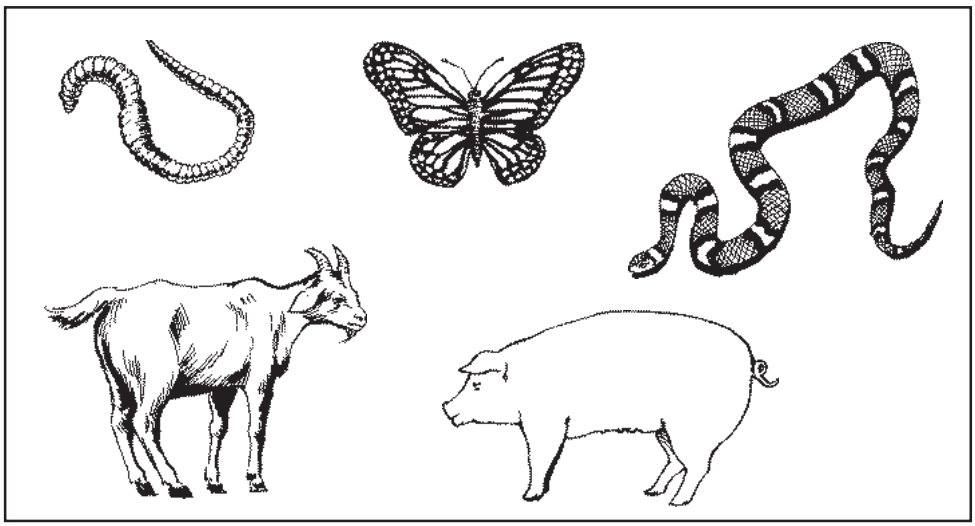
Animals are our friends.



Many animals serve as good companions. Cats, dogs and some fishes and birds make good pets. Other animals, such as frogs and spiders, help us a lot by eating harmful insects.

Let's Try This

Look at the following animals in the picture. Explain why each animal is important to people. Write your answers on a separate sheet of paper.



Have your Instructional Facilitator or Manager check your answers.

Let's Learn

As you learned from the previous section, animals are very important to us people. Life would be very difficult if there were no animals. Hence, we should learn how to take good care of animals.

If you have pet animals, or if you raise animals for a living, take good care of these animals. Feed them regularly and make sure that their surroundings are always clean and spacious enough. Take them to a veterinarian (animal doctor) when they are sick. Make sure also that they get enough exercise outdoors.

Respect animals. They have feelings and intelligence too. Do not maltreat animals even if they are not yours.

Take care of the environment, that is, make sure that our rivers, lakes and seas and forests are cared for. It is in these areas where a great variety of animals live. If we do not take care of the environment, many animals will lose their habitats and die.

Did you know that . . .

. . . in some parts of the world, abandoning pet animals is a crime? In the United States, for example, people who dump their pets may be jailed for ninety days or made to pay a fine of five thousand dollars!

Let's See What You Have Learned

Answer the following questions. Write your answers on the lines.

1. Why are animals important to us?

   _____

   _____

   _____

2. Why do we need to take care of the environment as well?

   _____

   _____

   _____

3. Do you think we should take care of such wild animals as lions, snakes, tigers and wild boars? Why?

   _____

   _____

   _____

Compare your answers with those in the *Answer Key* on page 50.

Let's Remember

- Animals are very important to people. They serve as helpers in our work, give us food and a source of enjoyment and livelihood, and make good companions as well.
- You can take care of animals by caring for your pets well, respecting all animals and taking care of areas that serve as habitats for these animals.

You have now reached the end of the module. Congratulations! Did you enjoy reading this module? Did you learn a lot from it? The following is a summary of its main points to help you remember them better.

Let's Sum Up

This module tells us that:

- Animals can be grouped according to structure, habitat and food eaten.
- The life cycle of an animal refers to the stages it undergoes as it passes from the time it begins to develop to the time it begins to reproduce.
- Animals are very important to people. They help us in our work, provide us with food and a source of income and give us pleasure and companionship.
- Taking care of animals means caring not just for your own pets but for all animals. This means respecting animals and treating them well and taking care of the environment that serves as their habitat.

What Have You Learned?

A. Encircle the letter of the correct answer.

1. Animals that maintain a constant temperature regardless of the temperature of their environment are called _____.

   a. ectothermic
   b. exothermic
   c. endothermic
   d. isothermic

2. These are the main classes of animals based on structure.

   a. invertebrates and vertebrates
   b. mammals and birds
   c. aquatic and terrestrial animals
   d. warm-blooded and cold-blooded animals

3. Animals that eat both plants and other animals are called _____.

   a. carnivores
   b. arthropods
   c. crustaceans
   d. omnivores

4. Which among the following is **not** a reptile?

   a. alligator
   b. tortoise
   c. salamander
   e. cobra

5. The four stages in the life cycle of a fruit fly, in the correct order, are:

   a. egg, pupa, larva, adult
   b. egg, larva, pupa, adult
   c. pupa, adult, larva, egg
   d. adult, pupa, egg, larva

6. _____ make up the largest group of arthropods.

   a. Insects
   b. Spiders
   c. Arachnids
   d. Mollusks

7. _____ include corals, sea anemones and jellyfish.

   a. Mollusks
   b. Sponges
   c. Coelenterates
   d. Insects

8. The larva of the butterfly is called _____.

   a. maggot
   b. caterpillar
   c. wriggler
   d. tadpole

9. We need to take care of the environment because this serves as the _____ of animals.

   a. surroundings
   b. food
   c. habitat
   d. covering

10. Shrimps are included in the group of _____.

    a. mollusks

    b. crustaceans

    c. mammals

    d. annelids

B. Write **True** on the line before the number if the statement is correct. If the statement is incorrect, change the underlined word(s) to make the statement correct.

_____ 1. Monkeys, lions, elephants and tigers are normally found in a zoo.

_____ 2. Catfish, eagles, carabaos and gorillas are classified as invertebrates.

_____ 3. Houseflies, scorpions, starfish and clams are vertebrates.

_____ 4. A habitat may be a house, barn, fishpond or a forest.

_____ 5. Fishes are vertebrates that can swim and have gills for breathing.

_____ 6. Herbivores include cows, goats and carabaos.

_____ 7. Rats, chickens and humans are carnivores.

_____ 8. Look at the stages of the life cycle of a butterfly.

a. larva b. egg c. adult d. pupa

The correct sequence of their life cycle is a, b, c, d.

_____ 9. Animals are important to us.

_____ 10. Feeding your pet animals is a sign of proper handling and care.

Compare your answers with those found in the *Answer Key* on page 50.

If you got a score of

0–7	You should study the whole module again.
8–15	Good! You should just review the parts you didn't understand.
16–20	Congratulations! That means that you understood the module very well. You are now ready to move on to the next module.

Answer Key

A. Let's See What You Already Know *(pages 1–3)*

1.	d	6.	a
2.	d	7.	d
3.	b	8.	b
4.	d	9.	d
5.	c	10.	b

B. Lesson 1

Let's Try This (pages 4–5)

1–4. (Answers will depend on the learners' own experiences.)

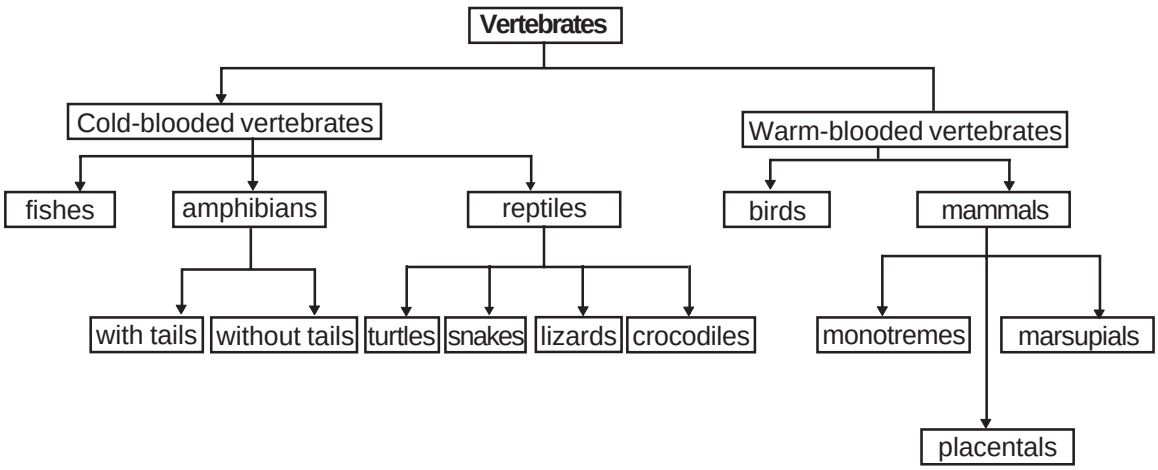
5. (Answers will depend on the learners' observations. The following is a list of animals that are commonly found in homes and communities.)

cat	mouse
bird	frog
butterfly	crayfish
human	turtle
fish	lizard

Let's Review (page 7)

The pictures of the following animals should be checked: rooster, whale, cow, rabbit, pigeon, turtle.

Let's Review (page 14)



Let's Review (page 22)

Arthropod Groups	Similarities
Insects Crustaceans Arachnids Millipedes Centipedes	All have an exoskeleton or hard covering on their bodies.

Let's See What You Have Learned (pages 25–26)

According to Size and Structur	
Vertebrate	**Inve**
cat monkey eagle goat shark snake crocodile frog	centipede millipede crab mussel leech roundworm coral

According to Habitat	
Aquatic	**Ter**
shark crocodile crab mussel leech coral frog	cat monkey eagle goat centipede millipede snake roundworm

According to Food Eaten		
Herbivore	**Carnivore**	
goat millipede coral	eagle shark millipede snake crocodile crab leech roundworm	ca m fr

C. Lesson 2

Let's Review (page 30)

For sexual reproduction to take place, the sperm from the male organism and the egg cell from the female organism must come together and form a new cell.

Let's Think About This (page 33)

(Answers will depend on the learners' observations and opinions. The following, however, are the expected answers.)

1. There are four stages in the life cycle of a fruit fly—the first one is when it is still an egg; the second is when it turns into a larva; the third, when it becomes a pupa; and the fourth, when it emerges as an adult fly.
2. The life cycle of a fruit fly does not have a beginning nor an end. The stages just repeat themselves over and over.

Let's Try This (page 37)

1. egg, chick, adult
2. puppy, adult
3. infancy, childhood, adolescence, adulthood

Let's See What You Have Learned (pages 37– 38)

1. reproduction
2. budding
3. sexual reproduction
4. life cycle
5. generation
6. egg
7. tadpole
8. caterpillar
9. human intestines
10. pupa stage

D. Lesson 3

Let's Try This (page 39)

(Answers will vary depending on the animals the learners will name. The following are sample answers.)

1. dog—serves as a companion and friend; guards the home
2. cow—source of meat, cheese and milk
3. chicken—source of meat and eggs

Let's See What You Have Learned (page 43)

(Answers will vary according to how learners stated their opinions. The following, however, are the expected answers.)

1. Animals are important to us because they help us in our work, give us food, enjoyment and companionship and help us earn income.
2. We need to take care of the environment as well because it is in various places around us that animals live. These places serve as their habitats. If we destroy these places, the animals will die.
3. Yes, we should take care even of wild animals. They too have their own uses, if not to us, then to other organisms around us. They help keep the environment and other animals and plants alive.

E. What Have You Learned? *(pages 44–46)*

A.

1.	c	6.	a
2.	a	7.	c
3.	d	8.	b
4.	c	9.	c
5.	b	10.	b

B.

1.	True	6.	True
2.	vertebrates	7.	omnivores
3.	invertebrates	8.	b, a, d, c
4.	True	9.	True
5.	True	10.	True

Glossary

Antennae Jointed structures found on the head of an insect or crustacean that act as feelers or even as "noses"

Backbone Also known as the spinal column; the long column of bones that runs along the trunk of an animal

Cartilage White, elastic material that is not as hard as bone

Circulatory system A group of organs that work to distribute blood to all parts of the body

Digestive system A system of organs that work to enable the body to process the food taken in and to absorb nutrients from this food

Ectothermic Said of an organism whose body temperature is the same as that of its environment

Egg cell A specialized cell that comes from a female animal and which helps it reproduce

Embryo Refers to the developing young organism

Endoskeleton Internal skeleton; the skeleton found inside the body of an organism

Flagella Whiplike structures that project from the bodies of simple organisms and which help them move

Heart A muscular organ whose primary function is to pump blood throughout the body

Intestines Tube-like parts of the digestive system the primary function of which is to digest the food taken in by the body

Magnifying glass A hand-held lens that makes objects appear larger than they really are

Mammary glands The milk-producing glands of a mammal; in a human female, the mammary glands are the breasts; in a cow, the udders

Mobility Ability to move

Muscular system A system of organs that enable an animal to move

Nervous system A system of organs that enable an animal to receive, process and respond to information from the environment and from inside the body

Pouch A pocket of skin on the belly of a marsupial

Prey An animal hunted as food by another animal

Sense organ Any organ of the body capable of receiving certain signals from the environment; sense organs include the eyes, ears, nose, tongue and skin

Skeletal system A system of structures that provide framework and give shape to the body

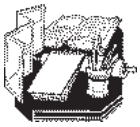
Sperm A specialized cell of the male animal that enables it to reproduce

Spiny-skinned Having prickly skin or skin covered with spines

Tentacles Long, thin, flexible structures that extend from the mouth of some invertebrates and which are used for defense, catching prey or for attaching to surfaces

Thorax The middle section of the body of an insect

Vertebra Any of the small bones that form the backbone



Reference

Balzer, Le Von, et al, eds. *Biology*. Illinois, U.S.A.: Scott, Foresman and Company, 1986.