

Types of Invertebrates

Animals can be divided into two groups: vertebrates and invertebrates.

Vertebrates or animals with backbones have a skeleton on the inside that is made of cartilage and bone. This supports a vertebrate's body. Vertebrate groups include fish, mammals, reptiles, amphibians and birds. Humans are vertebrates.

Animals without a backbone are called invertebrates. Most invertebrates have exoskeletons. An exoskeleton is a hard outer covering that protects an animal's body and gives it support. Some invertebrate groups include insects, spiders, mollusks, sponges, spiny-skinned and worms.

Classifying Invertebrates

Scientists believe that invertebrates make up 97% of all animals. To help study these many invertebrates, scientists classify them into several smaller groups. These groups are based on the characteristics or traits that they have in common.

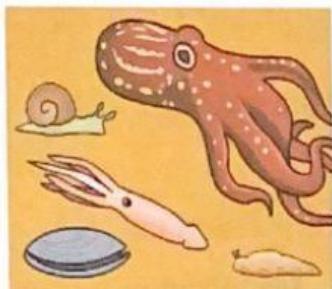
Sponges

A sponge spends its life attached to rock or other hard surfaces. Most sponges live in salt water. They have many different shapes and sizes. Many sponges have needle like parts that give them shape and support. The shapes of the needles are used to help classify sponges into different groups. All sponges have an outer body layer that has many pores. A pore is a small hole or opening. Sea water enters a sponge



through its pores. The sponge filters the water for tiny bits of food and traps it on the cells in its inner layer.

Mollusks



They have soft bodies that has three parts; the head, the foot and the body mass. Some have flexible tentacles for sensing their environment or grabbing things. Most mollusk species grow a hard shell for protection, but their shell grows in only one or two pieces. Most mollusk species only live in the ocean, but some live in freshwater or on land. Examples of mollusks are snails, slugs, clams, squids and octopuses.

Spiny - Skinned Animals

An echinoderm is a spiny skinned invertebrate that lives in the ocean. The sea star is one kind of echinoderm. The outer body of the sea star is made up of hard plates covered by a thin skin. The plates help protect the sea star.



Echinoderms move from place to place on tube feet. This is a hollow structure with a sucker at one end. The tube feet are also used for getting food. Another example of echinoderms is the sea urchin.



Worms

Worms are simple animals that have a tube-shaped body. Scientists classify worms into three groups; flat worms, round worms and segmented worms. Some worms in each group are **parasites**. A parasite is a living thing that lives in or on another living thing. The parasite harms the living

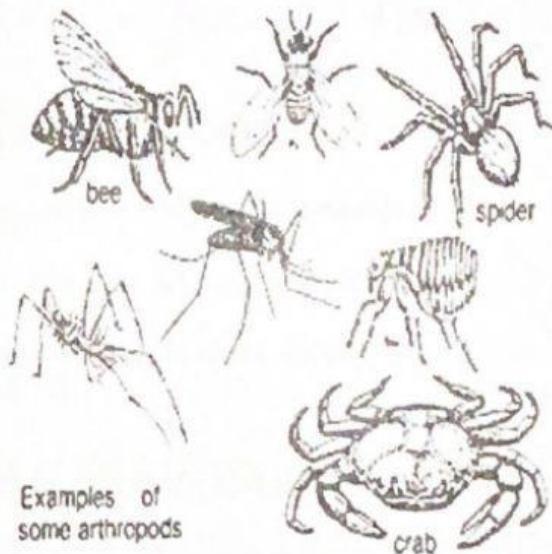
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thing on which it lives. The living thing that the parasite usually depends on is called the host. The parasite usually depends on its host for food.

Arthropods

Arthropods all have exoskeletons.

Exoskeletons are hard outer shells. It protects the animal from the outside world. They have jointed legs. Inside those joints and exoskeletons are muscles that help the organisms move. Arthropods also have open circulatory systems. These systems circulate nutrients throughout the inside of that exoskeleton so the muscles receive all the energy needed to move quickly. Arthropods



also have very advanced sense organs. Insects, spiders, crabs and lobsters are arthropods.

What have you learned?

A. Circle the letter that is next to the correct answer. (2 pts.)

1. Which of the following are examples of arthropods?
 - a. flat worms, crustaceans, and flies
 - b. flat worms, sponges, and spiders
 - c. flies, flat worms and spiders
 - d. spiders, flies and crustaceans

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2. How many body parts do mollusks have?

- a. 2
- b. 3
- c. 4
- d. 5

B. Write true or false on the lines provided. (3 pts.)

3. Humans are invertebrates. _____

4. Some sponges have pores. _____

5. Scientists have classified worms into 5 groups. _____

C. Fill in the blanks. Use the words in the box to help you. (4 pts.)

spiny-skinned	exoskeleton	water	vertebrates	cells
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6. _____ are animals with backbones.

7. The _____ protect an arthropod from the outside world.

8. A sponge filters the _____ for food and traps it on cells found in its inner layer.

9. An echinoderm is a _____ animal that lives in the sea.

D. Answer all questions in complete sentences. (3 pts.)

10. What are invertebrates?
