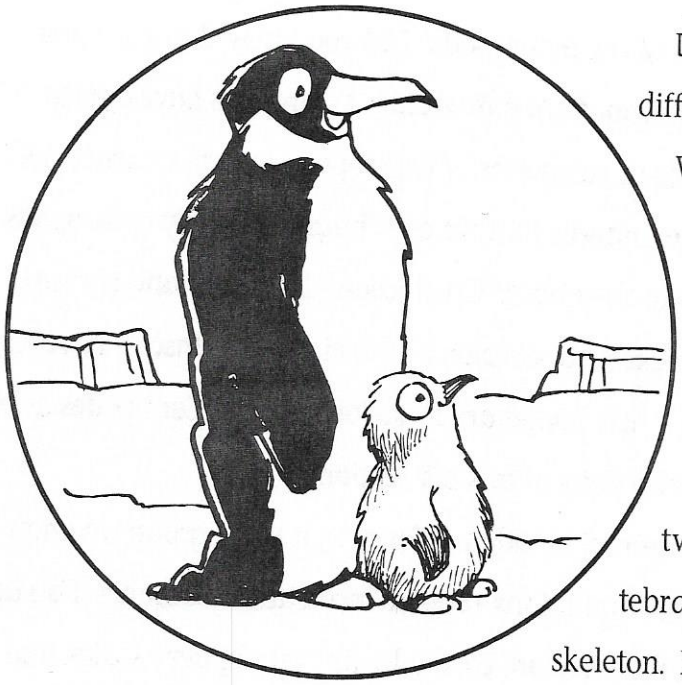
Animal Classification



Did you know that there are possibly 10 million different types of animals living on our planet Earth? With so many different types, how do you think biologists can keep them straight? They use a process called classification. Classification is a way to put things that are alike in groups, or "kingdoms." The animal kingdom is divided into groups and then into subgroups. There are two main groups of animals: vertebrates and invertebrates. Vertebrates are animals with an internal skeleton. Invertebrates are animals without backbones. More than 98% of all the animal species in the world are invertebrates. All invertebrates are cold-blooded. This means they cannot control their own body temperature. They depend on their environment to stay warm. The simplest invertebrate animals are the sponges. They filter water to remove tiny plants and animals. Most sponges live in salt water, but there are a few freshwater sponges. Soft, cup-shaped water creatures are another type of invertebrate. They have stinging cells on their tentacles. Some well-known cup-shaped animals are jellyfish, sea anemones, and coral.

Worms are another type of invertebrate. Worms are grouped according to their shape. There are flatworms, roundworms, and segmented worms. The common earthworm is a segmented worm. Echinoderms are another group. They are spiny-skinned animals. Echinoderms are unusual because you cannot tell their front from their back. Their body parts branch out from the center of their body like spokes on a wheel. They have a hard, shell-like, spiny covering on the outside of their body. Some echinoderms are sand dollars, sea urchins, and sea stars. All echinoderms live in the ocean. Mollusks are another group. They are seashell animals. Most mollusks have thick, soft bodies that are protected by hard shells. They are found living on land and in freshwater and salt water. Clams, snails, and squid are some types of mollusks.

The largest invertebrate group contains all of the arthropods. Did you know that scientists have found about 9 million different species of arthropods in our world? Arthropods have a hard exoskeleton and jointed legs. There are five classes, or categories, of arthropods: insects, crustaceans, arachnids, centipedes, and millipedes. Most of the animals that we call "bugs" are really arthropods. One way to tell them apart is by the number of legs they have. Crustaceans, like crabs and shrimp, have ten legs. Arachnids, which include spiders, ticks, and scorpions, have eight legs. Insects have six legs. Centipedes and millipedes have lots of legs. Their bodies are made of sections. Centipedes have one pair of legs per section, and millipedes have two pairs of legs per section.

Vertebrates are the smallest group in the animal kingdom. However, it is the group we know the most about. Vertebrates have five classes: fish, amphibians, reptiles, birds, and mammals. Fish are cold-blooded vertebrates that breathe through gills. They are covered with wet, slippery scales, and most lay eggs. Amphibians have smooth skin that must stay moist. They hatch from eggs and are cold-blooded. Amphibians, such as frogs, toads, and salamanders, experience metamorphosis during their lifetime. Most adult amphibians live mainly on land. Reptiles have dry scales and dry skin, breathe with lungs, are cold-blooded, and most hatch from leathery eggs. Snakes, turtles, lizards, alligators and crocodiles are common reptiles. Birds are warm-blooded vertebrates that hatch from hard-shelled eggs, are covered with feathers, breathe with lungs, and have wings. They have a beak, no teeth, and a strong skeleton made of many hollow bones. Ducks, hawks, robins, and eagles are all birds that can fly. The ostrich and penguin are some birds that do not fly. Mammals are warm-blooded vertebrates that breathe with lungs. They have babies that are born alive and nursed by their mother's milk. Mammals are covered with skin and hair. Some mammals have a lot of hair, or fur. Other mammals, like whales, have very little hair. Scientists classify mammals as the highest form of life. Can you guess what group you are classified under?

Comprehension Questions

Literal Questions

1. What are the two main kinds of animals in the animal kingdom? Which is most common?
2. Compare and contrast vertebrates and invertebrates. How are they similar? How do they differ? Create a Venn diagram to show these similarities and differences.
3. What are the different types of invertebrates?
4. What are some different types of vertebrates?
5. How many different species of arthropods are in our world?

Inferential Questions

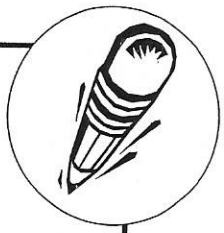
1. How does classification help scientists?
2. What are some characteristics you think scientists use to classify animals into different groups?
3. How are reptiles and amphibians different? How are they the same?
4. Why do you think zoologists usually focus on one very specific group within the animal kingdom?
5. Based on the story you just read, what animal groups would you expect to see at the beach? How would these animal groups be different from the groups you would see at a park?

Making Connections

1. Which group or subgroup within the animal kingdom do you see the most in your neighborhood?
2. Classification is a method of sorting things into groups or categories. What kinds of classification do you do? What is classified in your house? At the library? At your school?
3. The Animalia Channel is showing the following television shows in a row: "Awesome Arachnids," "Interesting Insects," and "Crafty Crustaceans." What classification would you use to categorize this group of television shows?
4. Which group and/or subgroup are you most similar to?
5. If you could spend one day in a different group within the animal kingdom, what group would you want to be a part of? What would you be? What would you do during that day?

Name _____ Date _____

Sharpen Your Skills



1. Out of every 100 animals within the animal kingdom, how many are vertebrates?
   - ○ 98
   - ○ 50
   - ○ 33
   - ○ 2

2. Zody the zoologist classified some animals yesterday. Look at the classification of the subgroup: sponges—worms—fish—echinoderms.
   Which animal does not belong with the others?
   - ○ sponges
   - ○ fish
   - ○ worms
   - ○ echinoderms

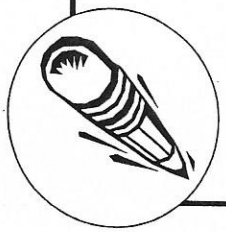
3. Look at the following words: centigrade—centimeter—centipede.
   What do you think the root "centi" means?
   - ○ measure
   - ○ feet
   - ○ cents
   - ○ hundred

4. How would you split the word "classification" into syllables?
   - ○ clas-si-fi-ca-tion
   - ○ cla-ss-ifi-ca-tion
   - ○ cla-ssi-fi-ca-tion
   - ○ cl-ass-i-fica-tion

5. Which words complete the following sentence?
   Fish are a class of _____ within the _____ kingdom.
   - ○ arthropods/vertebrate
   - ○ invertebrates/animal
   - ○ echinoderms/vertebrate
   - ○ vertebrates/animal

6. Which word would finish this analogy?
   Vertebrates are to **internal skeleton** as most _____ are to **external skeleton.**
   - ○ animals
   - ○ invertebrates
   - ○ exoskeletons
   - ○ spinal cords

7. Look at the order of the following classification: mammals—vertebrates—animal kingdom.
   What would come next in this sequence?
   - ○ plant kingdom
   - ○ invertebrates
   - ○ humans
   - ○ living things



Name _____ Date _____

Get Logical

The Pet Place is almost ready for its grand opening. It plans to feature unusual pets and animals from around the world. The owners want the layout for the display cases to be organized so that the customers and visitors can locate the animals they are interested in. Each wall is a different color—red, blue, green, orange, and yellow. Five creatures still need to be displayed—millipedes, rabbits, salamanders, sponges, and ostrich. Use the clues below to decide where each animal should be displayed.

Clues

1. A bird that cannot fly would be displayed on the orange wall.
2. The millipedes would not be displayed on the red or the green wall.
3. The amphibians are all displayed on the yellow wall.
4. The mammals are not on the blue or green wall.
5. The sponges are not on the red or blue wall.

Red Wall					
Blue Wall					
Green Wall					
Orange Wall					
Yellow Wall					
	Millipedes	Rabbits	Salamanders	Sponges	Ostrich

The millipedes should go on the _____.

The rabbits should go on the _____.

The salamanders should go on the _____.

The sponges should go on the _____.

The ostrich should go on the _____.