

1.1h Living things are classified by shared characteristics on the cellular and organism level. In classifying organisms, biologists consider details of internal and external structures. Biological classification systems are arranged from general (kingdom) to specific (species).

You can identify the levels of classification of organisms used by scientists.

Classification is the ordering of organisms into groups based on their similarities and differences.

The **kingdom** is the largest and most general level of classification.

The **species** is the smallest and most specific level of classification.

**Guided
Instruction**

DIRECTIONS Read the following information.






Millions of different kinds of organisms live on Earth. To keep track of organisms, scientists organize them into categories. **Classification** is the arrangement of organisms into groups based on the similarities and differences in their structures. These structural similarities and differences may be inside the organism, or even inside its cells. They may also be visible external structures.

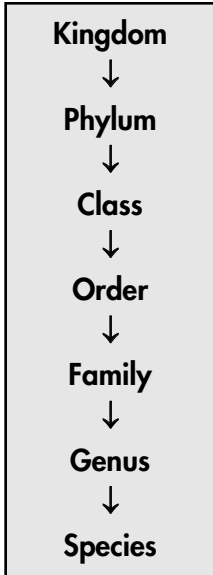
Based on its structures, every organism is placed in one of five **kingdoms**. The kingdom is the largest and most general level of organization. The different kingdoms and the organisms in each are shown below.

Guided Questions

How does the **classification** system distinguish between organisms?

Which **kingdom** do humans belong to?

Kingdom Animalia	Kingdom Plantae	Kingdom Fungi	Kingdom Protista	Kingdom Monera
				



Each kingdom is divided into phyla (singular, phylum). The organisms in a phylum all share one or more characteristics. They are more like each other than they are like members of other phyla. Every phylum is divided into classes. Humans and dogs both have hair and therefore belong to the same class. Birds do not have hair and so they belong to a different class.

A class is divided into orders and an order is divided into families. Families are divided into genera (singular, genus). A genus is divided into species, the smallest and most specific level of classification. A **species** includes only one kind of organism. All the members of a species resemble each other and are able to interbreed and produce offspring that can also interbreed. Human beings are one species in the animal kingdom. White oak trees are one species in the plant kingdom.

Guided Questions

How many kinds of organisms belong to a **species**?

DIRECTIONS For each question, write your answer in the spaces provided.

1. On what basis are organisms separated into different groups for classification?

2. Why do humans and dogs belong to the same class?

3. The oak and the maple are two different species of trees that also belong to different genera. However, these oaks and maples do share many characteristics. Based on their similarities, which levels of classification would they share?

4. Which are more closely related, two organisms that belong to the same family, or two organisms that belong to the same order? Explain your answer.

5. A scientist exploring a remote area of a tropical rain forest discovers an organism that has not been classified before. The organism is multicellular, and is not a plant or a fungus. It has no backbone. It has many characteristics of a previously identified species of spiders. What can you infer about how the scientist will classify this organism? Explain your answers.



Directions (6–10): For each question, write your answer in the spaces provided. Base your answers to question 6 through 10 on the following table.

CLASSIFICATION OF THE COMMON HONEYBEE		
Level of Classification		Organisms Included in Each Level of Classification
Kingdom	Animal	Birds, mammals, worms, insects
Phylum	Arthropoda	Insects, crustaceans, spiders
Class	Insecta	Beetles, flies, butterflies, bees
Order	Hymenoptera	Sawflies, ants, wasps, bees
Family	Apidae	Social bees such as bumble bees and honeybees
Genus	Apis	Various species of honeybees
Species	<i>Apis mellifera</i>	Only other members of this species

- 6 To what order does the honeybee belong?

- 7 The scientific name of an organism includes the genus name followed by the species name. What is the scientific name of the common honeybee?

- 8 Why are cats and honeybees both classified in the same kingdom?

- 9 Are bees more like beetles or spiders? How can you tell?

- 10 Two different farms raise honeybees. At one farm the bees are called *Apis cerana* and at the other farm, the bees are called *Apis mellifera*. Explain how these bees are the same and how they are different from each other.

How they are the same: _____

How they are different: _____

Directions (11–16): Each question is followed by four choices. Decide which choice is the *best* answer. Circle the number of the answer you have chosen.

11 Which is the correct order of these levels of classification, from most general to most specific?

- (1) species, order, kingdom
kingdom, order, species
- (3) order, species, kingdom
- (4) kingdom, species, order

12 The drawing below shows an organism. In which kingdom does it belong?



- (1) animal kingdom
plant kingdom
- (3) fungi kingdom
- (4) protist kingdom

13 What is the most general level of classification?

- kingdom
- (2) phylum
- (3) order
- (4) species

14 Which of the following is true about members of the same species?

- (1) They all look identical.
- (2) They come from different genera. They are able to breed together and produce offspring.
- (4) Their body structures are very different.

15 Which organism is the most similar to a honeybee?

- ant
- (2) fish
- (3) human
- (4) crustacean

16 While classifying animals by their internal structure, a biologist might look at the

- (1) type of habitat
- (2) number of legs
shapes of bones
- (4) color of fur