

Key Concept Builder **LESSON 1**

Classifying Living Things

Key Concept What are living things?

Directions: On the line before each statement, write T if the statement is true or F if the statement is false. If the statement is false, change the underlined word(s) to make it true. Write your changes on the lines provided.

- _____ 1. In all cells, macromolecules are organized into different structures that help cells function. _____
- _____ 2. When a a unicellular organism grows, the number of its cells increases.

- _____ 3. All living things need energy to survive. _____
- _____ 4. Some organisms are able to convert chemical energy to light energy that is used for many cellular processes. _____
- _____ 5. Many organisms use mitochondria to detect the environment, process information, and coordinate a response. _____
- _____ 6. Multicellular organisms reproduce asexually when one cell divides and forms two new organisms. _____
- _____ 7. Some multicellular organisms can reproduce asexually without a mate and produce offspring. _____
- _____ 8. Unicellular organisms have everything needed to obtain and use energy, reproduce, and grow inside one cell. _____

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Classifying Living Things

Key Concept What do living things need?

Directions: On the line before each statement, write the letter of the phrase that matches it correctly. Each phrase is used only once.

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| <p>_____ 1. Some bacteria live _____.</p> <p>_____ 2. Food is _____.</p> <p>_____ 3. A land iguana living in a warm, tropical environment _____.</p> <p>_____ 4. The type of food that an organism eats _____.</p> <p>_____ 5. Organisms live in environments _____.</p> <p>_____ 6. Most organisms can adapt _____.</p> <p>_____ 7. Water is _____.</p> | <p>A. to only a few habitats</p> <p>B. on body surfaces</p> <p>C. essential for survival</p> <p>D. specific to their needs</p> <p>E. depends on the habitat in which it lives</p> <p>F. would not survive in a cold place</p> <p>G. processed to obtain energy</p> |
|--|---|




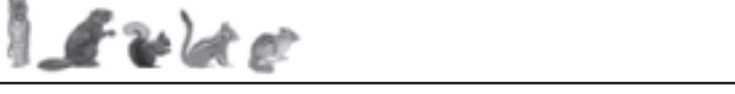




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LESSON 1

Classifying Living Things

Key Concept How are living things classified?

Directions: Use the table to answer each question or respond to each statement on the lines provided.

Table 1 Classification of the Eastern Chipmunk		Eastern chipmunk
Taxonomic Group	Number of Species	Examples
Domain Eukarya	about 4–10 million	
Kingdom Animalia	about 2 million	
Phylum Chordata	about 50,000	
Class Mammalia	about 5,000	
Order Rodentia	about 2,300	
Family Sciuridae	299	
Genus <i>Tamias</i>	25	
Species <i>Tamias striatus</i>	1	

- How many species are in the same domain as the Eastern chipmunk? _____
- Explain** why the number of species decreases from the top to the bottom of the chart.

- What is the most specific taxonomic group to which the Eastern chipmunk belongs? Explain.

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Classifying Living Things

Key Concept How are living things classified?

Directions: *On the line before each statement, write the letter of the correct answer.*

- _____ 1. Scientists use classification to group organisms that have similar _____.
- A. cells
 - B. traits
 - C. shapes
- _____ 2. All scientific names in the binomial nomenclature system are in _____.
- A. Latin
 - B. English
 - C. Spanish
- _____ 3. The branch of science that classifies living things is called _____.
- A. taxon
 - B. taxonomy
 - C. binomial nomenclature
- _____ 4. Domains are divided into _____ and then phyla, classes, orders, families, genera, and species.
- A. traits
 - B. taxon
 - C. kingdoms
- _____ 5. A species is made of all organisms that can _____ with one another and produce offspring that can reproduce.
- A. eat
 - B. live
 - C. mate
- _____ 6. The first word in the binomial name is the organism's genus. The second word might describe _____.
- A. three or four characteristics of the organism
 - B. a distinguishing characteristic of the organism
 - C. a characteristic that the organism shares with other organisms

Enrichment**LESSON 1**

New Status for an Old Life-Form

When early scientists first began to classify life, they divided it into two kingdoms—the animal kingdom and the plant kingdom. Later, when they began looking at objects under microscopes, they discovered another category of life—one-celled organisms.

Adding a New Domain

Until recently, those kingdoms fell under two domains: Prokarya and Eukarya. Prokaryotes are bacteria or simple-celled organisms that do not have a true nucleus. Eukaryotes are plants, humans, animals, and other cells that have a nucleus. However, in 1977, scientists made a discovery that prompted them to add a new domain to the classification system. The life-form that brought about that change is a single-celled organism called archaeobacteria.

For many years, Archaea were considered to be bacteria, so they were placed in the Prokarya domain. But scientists are discovering that there is more to Prokarya than previously thought. For that reason, Prokarya has been replaced by two domains: Bacteria and Archaea. Life-forms are now classified into three domains: Bacteria, Archaea, and Eukarya.

Applying Critical-Thinking Skills

Directions: *Respond to each statement.*

- 1. Hypothesize** Write at least two questions that a scientist would want to ask before he or she makes a new domain for an organism.
- 2. Apply** Researchers think that Archaea's ability to withstand extreme conditions will make them useful in medicines and other products, such as cold-water detergents. Describe a medicine or product that could benefit from Archaea's adaptability to extremes.

Surviving the Extremes

Microscopically, Archaea might look similar to bacteria but they have some important differences. Archaea can thrive in many types of environments but are especially suited to survival in extreme habitats. They can live in hot water and in cold water. They have been found near thermal vents on the ocean floor, 500 m to 600 m below ground, and in icy-cold ocean waters around Antarctica. Archaea can also live in extremely salty water and in environments that have little oxygen. The adaptability of archaeobacteria to extreme conditions has prompted scientists to consider that similar organisms could be present below the surface of Mars and other planets.

Making New Products

Although scientists' understanding of Archaea is still limited, the life processes of these organisms are of interest to more than just scientists. Manufacturers are hoping that Archaea can lead to improved cold-water laundry detergents, longer-lasting fragrances, and low-spoilage food processing.

