Name _____ Date _____ Class _____

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, <u>macromolecules</u> are organized into different structures that help cells function. _____

_____ **2.** When a <u>a unicellular</u> organism grows, the number of its cells increases. _____

_____ **3.** All living things need <u>energy</u> to survive. _____

_____ **4.** Some organisms are able to convert <u>chemical energy to light energy</u> that is used for many cellular processes. _____

_____ **5.** Many organisms use <u>mitochondria</u> to detect the environment, process information, and coordinate a response. _____

_____ **6.** <u>Multicellular</u> organisms reproduce asexually when one cell divides and forms two new organisms. _____

_____ **7.** Some multicellular organisms can reproduce <u>asexually</u> without a mate and produce offspring. _____

_____ **8.** <u>Unicellular</u> organisms have everything needed to obtain and use energy, reproduce, and grow inside one cell. _____

Name _____ Date _____ Class _____

Key Concept Builder

LESSON 1

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.*

_____ **1.** Some bacteria live _____.

_____ **2.** Food is _____.

_____ **3.** A land iguana living in a warm, tropical environment _____.

_____ **4.** The type of food that an organism eats _____.

_____ **5.** Organisms live in environments _____.

_____ **6.** Most organisms can adapt _____.

_____ **7.** Water is _____.

A. to only a few habitats

B. on body surfaces

C. essential for survival

D. specific to their needs

E. depends on the habitat in which it lives

F. would not survive in a cold place

G. processed to obtain energy

Name _____ Date _____ Class _____

Key Concept Builder **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

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 *Tamias*	25	
Species *Tamias striatus*	1	

Eastern chipmunk

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

_____

_____

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

_____

_____

Name _____ Date _____ Class _____

Key Concept Builder

LESSON 1

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

Name _____ Date _____ Class _____

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 archaebacteria.

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.

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 archaebacteria 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.

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.

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Challenge **LESSON 1**

Levels of Classification

You have been doing some research on the classification characteristics of an animal. To prepare for a science convention where you will discuss your work with other scientists, you need to construct a visual aid that shows how your research animal is classified and how each level of classification relates to the others.

First select the animal you want to discuss. Research this animal to see how it is scientifically classified and write a paragraph about the animal's habitat, what it looks like, and what it eats; include a few interesting facts about the animal.

Draw a Venn diagram showing how each classification level relates to the others. This will be your visual aid, so make it as large as you can on a piece of poster board. Be prepared to discuss how you have constructed your diagram.

Use the remaining space on this page for your research notes.