

**Ecosystems and Biomes** ▪ *Guided Reading and Study*

## Energy Flow in Ecosystems

*This section explains the different roles that organisms play in the movement of energy through an ecosystem. The section also describes how organisms in the different roles interact to form food chains and food webs.*

### Use Target Reading Skills

*After you read the section, reread the paragraphs that contain definitions of Key Terms. Use all the information you have learned to write meaningful sentences using Key Terms.*

### Energy Roles

Match the energy role with its definition.

Energy Role	Definition
___ 1. producer	a. Organism that breaks down wastes and dead organisms
___ 2. consumer	b. Organism that obtains energy by feeding on other organisms
___ 3. decomposer	c. Organism that can make its own food

4. What types of organisms are producers?

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5. Is the following sentence true or false? Energy enters all ecosystems as sunlight. \_\_\_\_\_

6. Is the following sentence true or false? Producers are the source of all the food in an ecosystem. \_\_\_\_\_

7. List two major groups of decomposers.

a. \_\_\_\_\_ b. \_\_\_\_\_

8. Complete the compare/contrast table.

Types of Consumers	
Type of Consumer	Type of Food
	Only plants
Carnivore	
	Both plants and animals
	Dead organisms

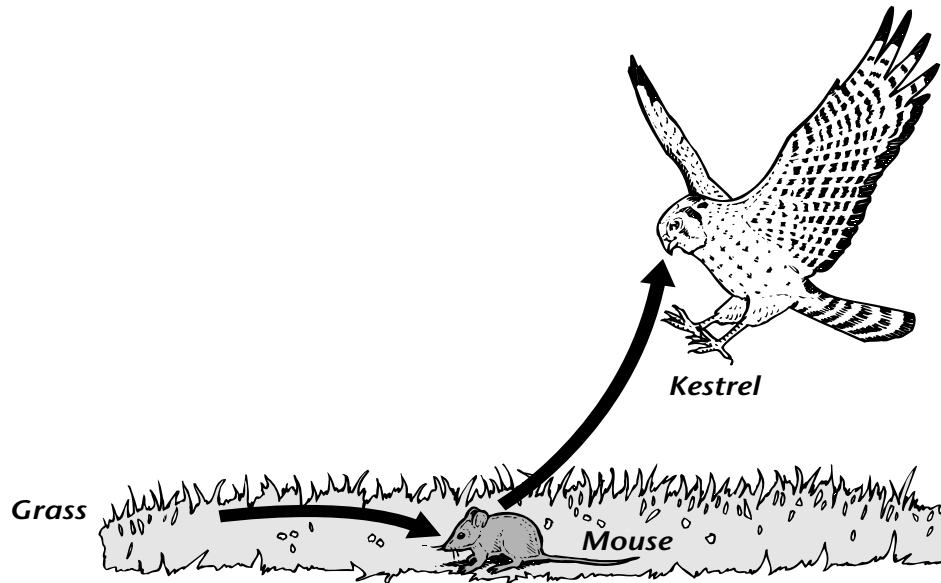
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## Energy Flow in Ecosystems *(continued)*

9. Is the following sentence true or false? Decomposers return raw materials to the environment. \_\_\_\_\_

### Food Chains and Food Webs

10. A series of events in which one organism eats another and obtains energy is called a(n) \_\_\_\_\_.
11. Label the producer and the first-level and second-level consumers in the food chain illustrated below.



12. The many overlapping food chains in an ecosystem make up a(n) \_\_\_\_\_.
13. Circle the letter of each sentence that is true about a food web.
- a. Producers are at the top of the food web.
  - b. All first-level consumers are carnivores.
  - c. Second-level consumers may be carnivores or omnivores.
  - d. An organism may play more than one role in a food web.

### Energy Pyramids

14. What does an energy pyramid show?

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15. Circle the letter of each sentence that is true about an energy pyramid.

- a. The greatest amount of energy is available at the producer level.
- b. At each level of the pyramid, there is more energy available.
- c. About half the energy at one level is transferred to the next.
- d. Most food webs have only three or four feeding levels.

16. Why are there usually few organisms at the top of a food web?

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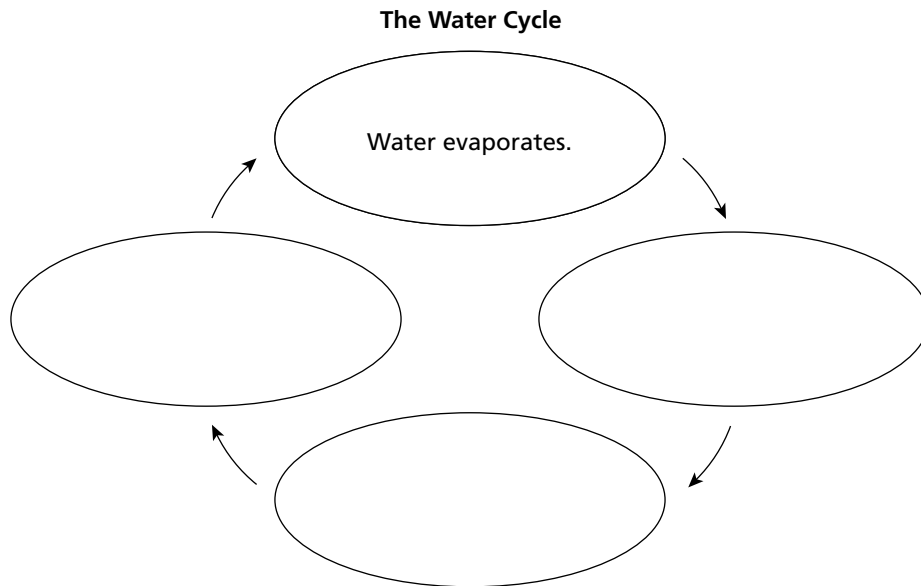
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## Cycles of Matter

*This section describes three cycles in nature that recycle matter in ecosystems.*

### Use Target Reading Skills

*As you read, make a cycle diagram that shows the water cycle. Write each event of the water cycle in a separate oval.*



### Introduction

1. Matter is made up of tiny particles called \_\_\_\_\_.  
Combinations of two or more of these tiny particles are called \_\_\_\_\_.
2. Circle the letter of each sentence that is true about matter and energy in ecosystems.
  - a. The supply of matter in an ecosystem is limited.
  - b. Matter is recycled in an ecosystem.
  - c. Energy is recycled in an ecosystem.

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**The Water Cycle**

3. Is the following sentence true or false? Water is essential for life.

\_\_\_\_\_

4. The continuous process by which water moves from Earth's surface to the atmosphere and back is the \_\_\_\_\_.

Match the term with its definition.

Term	Definition
____ 5. evaporation	a. Process by which liquid water changes to water vapor
____ 6. condensation	b. Forms of water that fall from clouds and reach Earth's surface
____ 7. precipitation	c. Process by which water vapor changes to liquid water

8. Is the following sentence true or false? The energy for evaporation comes from the sun. \_\_\_\_\_

9. What process results in the formation of clouds?

\_\_\_\_\_  
\_\_\_\_\_

10. List four forms of precipitation.

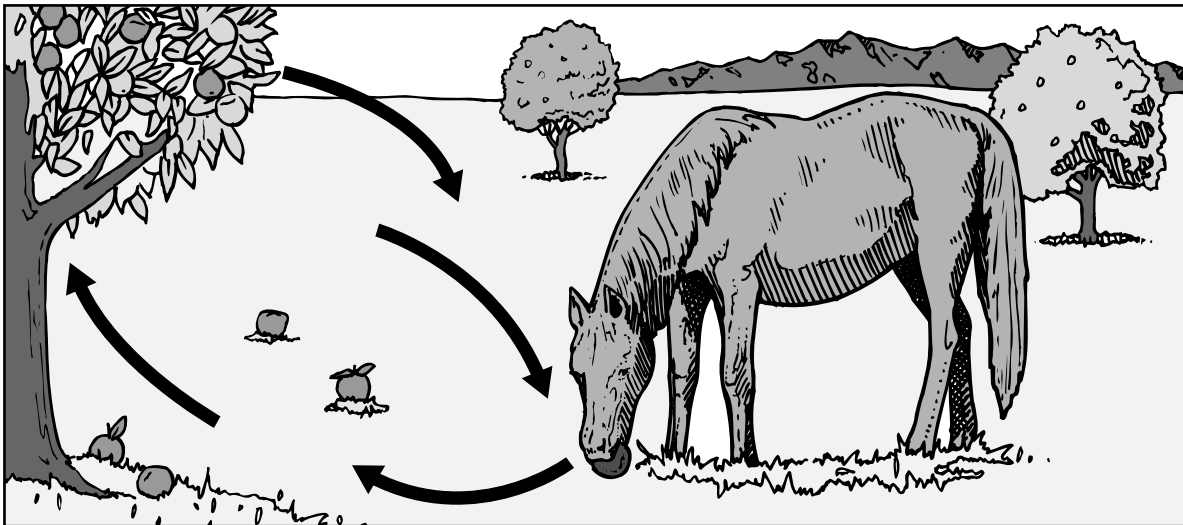
- a. \_\_\_\_\_ b. \_\_\_\_\_  
c. \_\_\_\_\_ d. \_\_\_\_\_

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## **Cycles of Matter** *(continued)*

### **The Carbon and Oxygen Cycles**

11. Is the following sentence true or false? Carbon is not necessary for life.  
\_\_\_\_\_
12. Circle the letter of each sentence that is true about the carbon and oxygen cycles.
  - a. Producers take in oxygen during photosynthesis.
  - b. Producers release carbon dioxide as a result of photosynthesis.
  - c. Consumers release carbon dioxide as a waste product.
  - d. Consumers take in oxygen for their life processes.
13. Label the arrows in the illustration below to indicate whether they show the movement of oxygen or the movement of carbon dioxide through the ecosystem.



### **The Nitrogen Cycle**

14. Is the following sentence true or false? Most organisms use nitrogen directly from the air. \_\_\_\_\_
15. The process of changing free nitrogen gas into a usable form of nitrogen is called \_\_\_\_\_.
16. Is the following sentence true or false? Most nitrogen fixation is performed by plants. \_\_\_\_\_