

Ecosystems and Biomes ▪ *Guided Reading and Study*

Energy Flow in Ecosystems (pp. 42–47)

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 (pp. 42–43)

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?

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.

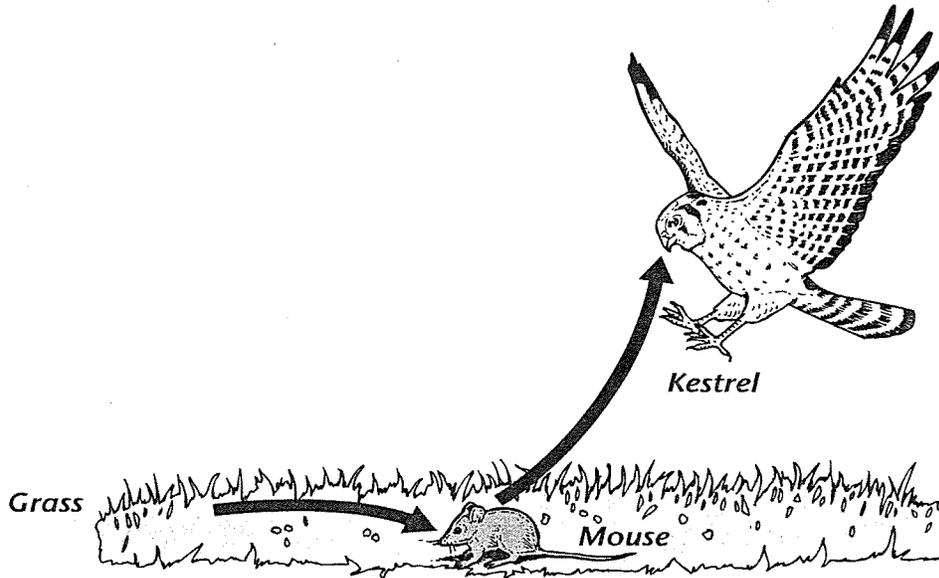
Types of Consumers	
Type of Consumer	Type of Food
	Only plants
Carnivore	
	Both plants and animals
	Dead organisms

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

Food Chains and Food Webs (pp. 44–45)

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 shown 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 (pp. 46–47)

14. What does an energy pyramid show?

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Energy Flow in Ecosystems *(continued)*

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 higher 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?

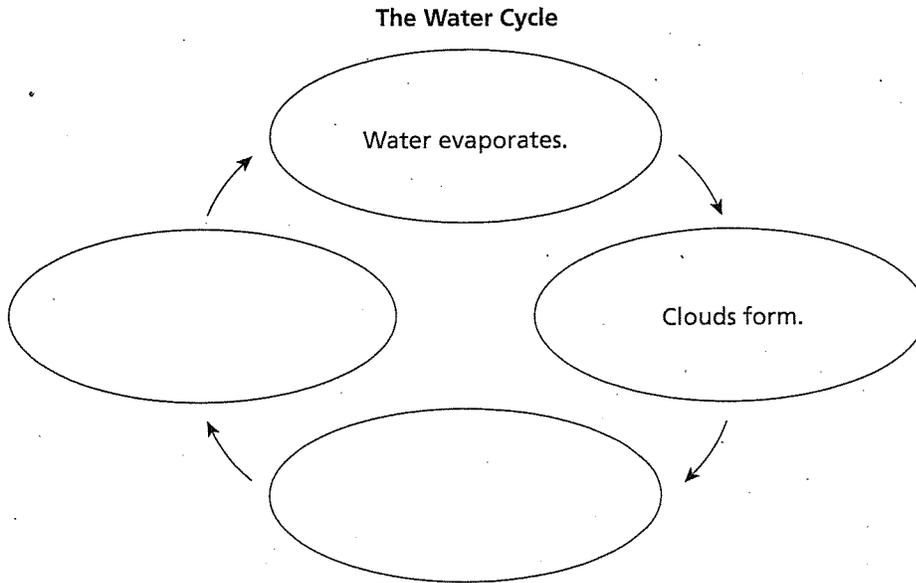
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Cycles of Matter (pp. 48–53)

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 (p. 48)

1. Matter is made up of tiny particles called _____.
A combination of two or more of these tiny particles that are joined and act as a unit is called _____.
2. The important cycles of matter in an ecosystem include the water cycle, the carbon and oxygen cycles, and the _____ cycle.

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Cycles of Matter *(continued)*

The Water Cycle (pp. 48–49)

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.

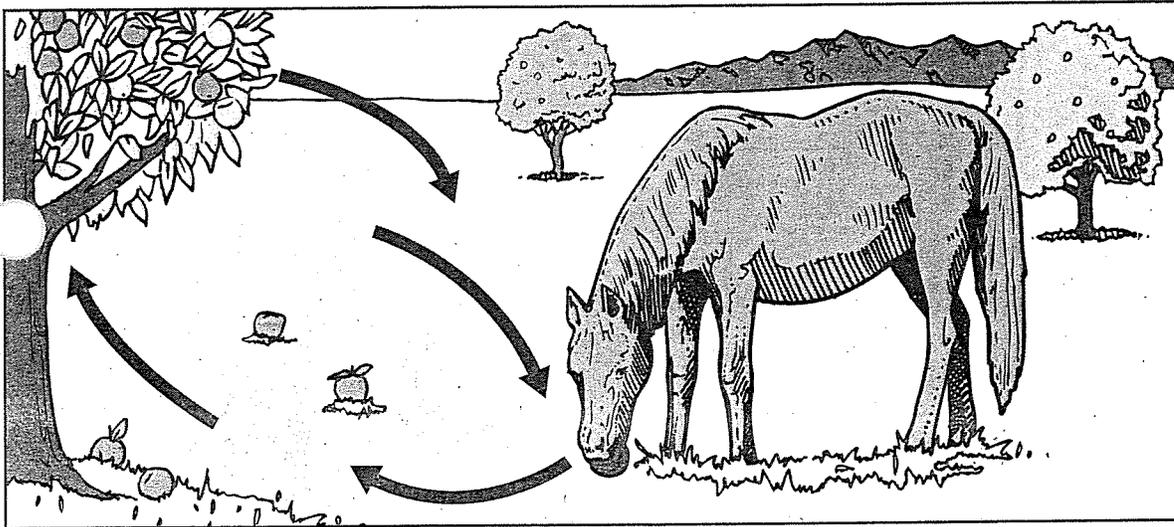
- a. _____ b. _____
c. _____ d. _____

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The Carbon and Oxygen Cycles (pp. 50–51)

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 (pp. 52–53)

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. _____

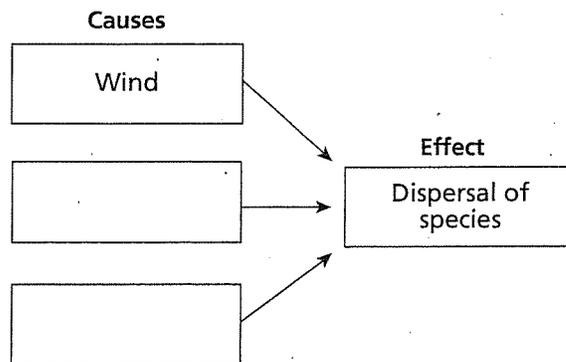
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Biogeography (pp. 54–57)

This section describes why organisms are found where they are and how organisms can move from one place to another. The section also describes factors that limit the movement of organisms from place to place.

Use Target Reading Skills

As you read, identify three causes of dispersal. Write the information in the graphic organizer below.



Introduction (p. 54)

1. The study of where organisms live is called _____.

Continental Drift (p. 55)

2. What is continental drift?

3. Is the following sentence true or false? All of today's continents were part of one large land mass about 225 million years ago.

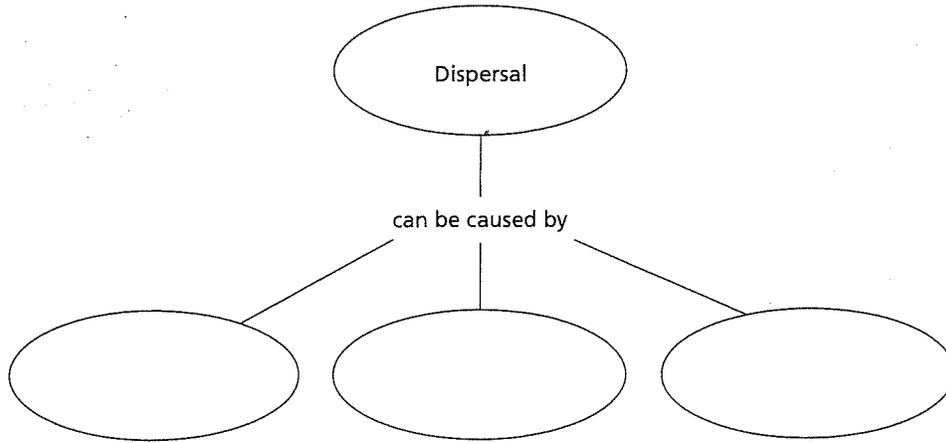
4. Is the following sentence true or false? The movement of the continents has had little impact on the distribution of species.

Means of Dispersal (pp. 55–56)

5. The movement of organisms from one place to another is called _____.

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5. Complete the concept map.



7. What organisms are dispersed by the wind?

8. Give examples of ways organisms may be dispersed by other living things.

9. Is the following sentence true or false? Humans are not important to the dispersal of other species. _____

10. A species that has been carried into a new location by people is called a(n) _____.

Limits to Dispersal (pp. 56–57)

11. List three factors that limit dispersal of a species.

a. _____ b. _____
c. _____

12. What are some examples of physical barriers that limit dispersal?

13. How can competition act as a barrier to dispersal?

14. The typical weather pattern in an area over a long period of time is the area's _____.

15. Is the following sentence true or false? Places with similar climates tend to have species that occupy similar niches. _____

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Biomes (pp. 58–67)

This section describes several different biomes, or groups of similar ecosystems, that are found on Earth. The section also tells where the different biomes are located.

Use Target Reading Skills

As you read, compare and contrast the different biomes by completing the table below.

Characteristic	Temperate Rain Forest	Tropical Rain Forest	Desert	Grass-land	Deciduous Forest	Boreal Forest	Tundra
Temperature		Warm all year					
Precipitation							
Typical Organisms							

Introduction (p. 58)

1. A group of land ecosystems with similar climates and organisms is called a(n) _____.
2. Is the following sentence true or false? It is mostly the climate in an area that determines its biome. _____

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Rain Forest Biomes (pp. 59–60)

3. How do temperate rain forests differ from tropical rain forests?

4. Where are some temperate rain forests located?

5. Circle the letter of each sentence that is true about tropical rain forests.

- a. They are found only in Africa and South America.
- b. They receive a lot of rainfall and sunlight year-round.
- c. They contain few species.
- d. They are much warmer in some seasons than in others.

6. The tall trees in a tropical rain forest form a leafy roof called the _____.

Desert Biomes (p. 61)

7. Circle the letter of each sentence that is true about deserts.

- a. They receive less than 10 centimeters of rain per year.
- b. They have more evaporation than precipitation.
- c. They are always hot.
- d. They have extreme temperatures.

Grassland Biomes (p. 62)

8. Circle the letter of each sentence that is true about grasslands.

- a. They have many trees.
- b. They have rich soil.
- c. They receive more than 75 centimeters of rain each year.
- d. They are home to many of the largest animals on Earth.

9. Grasslands that are located closer to the equator than prairies are called _____.

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Biomes (*continued*)

Deciduous Forest Biomes (p. 63)

10. Trees that shed their leaves and grow new ones each year are called _____.
11. Circle the letter of the sentence that is true about deciduous forests.
- a. They receive at least 50 centimeters of rain each year.
 - b. Their temperatures are constant throughout the year.
 - c. Their growing season usually lasts for 10 months.
 - d. They contain very few habitats.

Boreal Forest Biomes (p. 64)

12. What type of trees are found in a boreal forest?

13. Circle the letter of each sentence that is true about boreal forests.
- a. They are farther north than deciduous forests.
 - b. They have very cold winters.
 - c. They receive little snow.
 - d. Their most common species of trees are fir, spruce, and hemlock.

Tundra Biomes (p. 65)

14. An extremely cold, dry biome is the _____.
15. Circle the letter of each sentence that is true about the tundra.
- a. It may receive no more precipitation than a desert.
 - b. Most of its soil is frozen all year.
 - c. Its plants include mosses and dwarf trees.
 - d. Its only animals are insects and birds.

Mountains and Ice (p. 66)

16. Is the following sentence true or false? If you hiked to the top of a tall mountain, you would pass through a series of biomes.

17. What are some organisms adapted to life on the ice?

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Aquatic Ecosystems (pp. 70–73)

This section describes the two groups of aquatic, or water-based, ecosystems that are found on Earth. The section also tells where the ecosystems are located.

Use Target Reading Skills

As you read, make an outline about the different types of aquatic ecosystems. Use the red headings for the main ideas and the blue headings for the supporting ideas.

Aquatic Ecosystems
I. Freshwater ecosystems
A. Streams and rivers
B. _____
II. Marine ecosystems
A. _____
B. _____

Introduction (p. 70)

1. Circle the letter of each sentence that is true about water ecosystems.
 - a. They cover about one quarter of Earth's surface.
 - b. They include both freshwater and saltwater ecosystems.
 - c. They are affected by temperature, sunlight, oxygen, and salt content.
 - d. Their most common producers are plants.

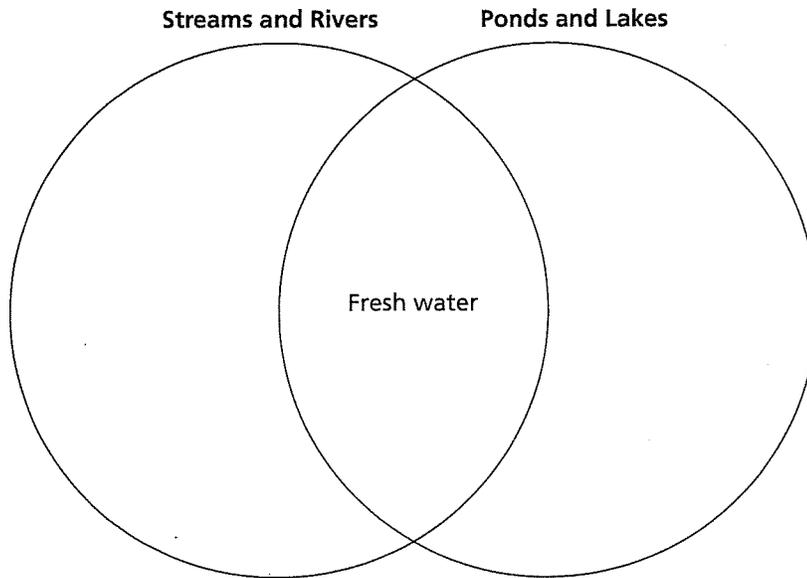
Freshwater Ecosystems (p. 71)

2. Is the following sentence true or false? Lakes are generally larger and deeper than ponds. _____

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Aquatic Ecosystems *(continued)*

3. Complete the Venn diagram.



4. What are some organisms adapted to life in a stream?

Marine Ecosystems (pp. 72–73)

5. Complete the compare/contrast table.

Types of Marine Ecosystems	
Type of Biome	Where It Is Located
Estuary	Where fresh river water and salty ocean water meet
	Between the highest and lowest tide
	Below the low-tide line and out over the continental shelf
	On the surface of the open ocean
	Below the surface of the open ocean

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6. Is the following sentence true or false? An estuary is a very poor habitat for living things. _____

7. Why is the intertidal zone a difficult place to live?

8. Circle the letter of each sentence that is true about the neritic zone.

- a. Its water is too deep for photosynthesis to occur.
- b. It is particularly rich in living things.
- c. Many large schools of fish feed there.
- d. Coral reefs may form there.

9. Is the following sentence true or false? Algae form the basis of almost all open-ocean food webs. _____

10. Circle the letter of each sentence that is true about the deep zone.

- a. Throughout most of the deep zone, the ocean is completely dark.
- b. Most animals in the deep zone feed on algae.
- c. Some animals in the deep zone have eyes that glow in the dark.
- d. Plants grow on the ocean floor in the deep zone.

Ecosystems and Biomes ▪ Key Terms

Key Terms

Match each definition in the left column with the correct term in the right column. Then write the number of each term in the appropriate box below. When you have filled all the boxes, add up the numbers in each column, row, and two diagonals. All the sums should be the same.

Definitions

- a. Consumer that eats both plants and animals
- b. Carnivore that feeds on the bodies of dead organisms
- c. Process by which a liquid changes to a gas
- d. A region of shallow water below the low-tide zone that extends over the continental shelf
- e. Movement of organisms from one place to another
- f. Typical weather pattern over a long period of time in an area
- g. Group of land ecosystems with similar climates and organisms
- h. Permanently frozen soil found in the tundra
- i. Point where the fresh water of a river meets the salt water of an ocean

Terms

- 1. scavenger
- 2. biome
- 3. climate
- 4. estuary
- 5. dispersal
- 6. omnivore
- 7. neritic zone
- 8. evaporation
- 9. permafrost

A	B	C		
			=	_____
D	E	F	=	_____
G	H	I	=	_____
			=	_____
=	=	=	=	_____