

Chapter 3 The Biosphere

Chapter Vocabulary Review

Short Answer On the lines provided, define the following terms.

1. ecology _____

2. biosphere _____

3. species _____

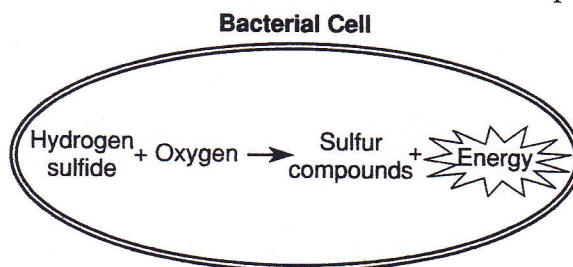
4. community _____

5. biome _____

6. autotroph _____

Multiple Choice On the lines provided, write the letter of the phrase or term that best answers each question.

- _____ 7. What are the products of photosynthesis?
a. water and energy
b. carbon dioxide and carbohydrates
c. water and sugars
d. oxygen and carbohydrates
- _____ 8. What process does the illustration below show?
a. photosynthesis
b. evaporation
c. chemosynthesis
d. transpiration



- _____ 9. Which of the following types of organisms obtain energy by eating only plants?
a. producers
b. herbivores
c. omnivores
d. carnivores
- _____ 10. Which of the following types of heterotrophs eat other animals?
a. omnivores and carnivores
b. herbivores and omnivores
c. carnivores only
d. carnivores and herbivores

- _____ 11. What are organisms that feed on plant and animal remains and other dead matter called?
 - a. decomposers
 - b. omnivores
 - c. detritivores
 - d. herbivores
- _____ 12. Which of the following types of heterotrophs would bacteria and fungi be classified as?
 - a. detritivores
 - b. herbivores
 - c. carnivores
 - d. decomposers
- _____ 13. What is the one-way flow of energy in an ecosystem called?
 - a. a food chain
 - b. an energy pyramid
 - c. a food web
 - d. a biomass pyramid
- _____ 14. What links all the food chains in an ecosystem together?
 - a. trophic levels
 - b. an energy pyramid
 - c. a food web
 - d. a biomass pyramid
- _____ 15. What is each step in a food chain or food web called?
 - a. a trophic level
 - b. a biomass
 - c. an ecological pyramid
 - d. a limiting level
- _____ 16. What pyramid represents the amount of energy or matter that exists in each level of a food web?
 - a. a food pyramid
 - b. an ecological pyramid
 - c. an ecosystem pyramid
 - d. a food web pyramid
- _____ 17. What is the total amount of living tissue within a given trophic level called?
 - a. biomass
 - b. limiting nutrient
 - c. biome
 - d. nutrient

Completion *On the lines provided, complete the following sentences.*

18. Molecules are passed around again and again within the biosphere in _____ cycles.
19. The process by which water changes from liquid form to an atmospheric gas is called _____.
20. During _____, water enters the atmosphere by evaporating from the leaves of plants.
21. A chemical substance that an organism requires to live is called a(an) _____.
22. The conversion of atmospheric nitrogen into ammonia is a process called _____.
23. The conversion of nitrates into nitrogen gas is called _____.
24. The rate at which organic matter is created by producers or consumers is called _____.
25. A nutrient that is scarce or cycles slowly through an ecosystem is called a(an) _____.

Energy Levels Review

The Big Idea!

In an ecosystem, the flow of energy moves in one direction.

Concepts

- The transfer of matter and energy to higher trophic levels is inefficient. Only about 10 percent of energy is transferred between trophic levels.
- There are fewer organisms at higher trophic levels. The number of organisms at a given level depends on the biomass and energy supplied by the level below.
- Food webs show the connections between food chains in a community or an ecosystem.

Words

biomass ecological pyramid food web

PART A Complete the following.

1. What is meant by the term *biomass*?

2. What is an ecological pyramid?

3. Explain the 10-percent law.

4. What does a food web show?

5. What happens to the relative number of organisms as you move up an ecological pyramid?

PART B A certain ecosystem contains the following organisms:

grass

snakes that eat mice

toads that eat beetles

rabbits, mice, beetles, and deer that eat grass

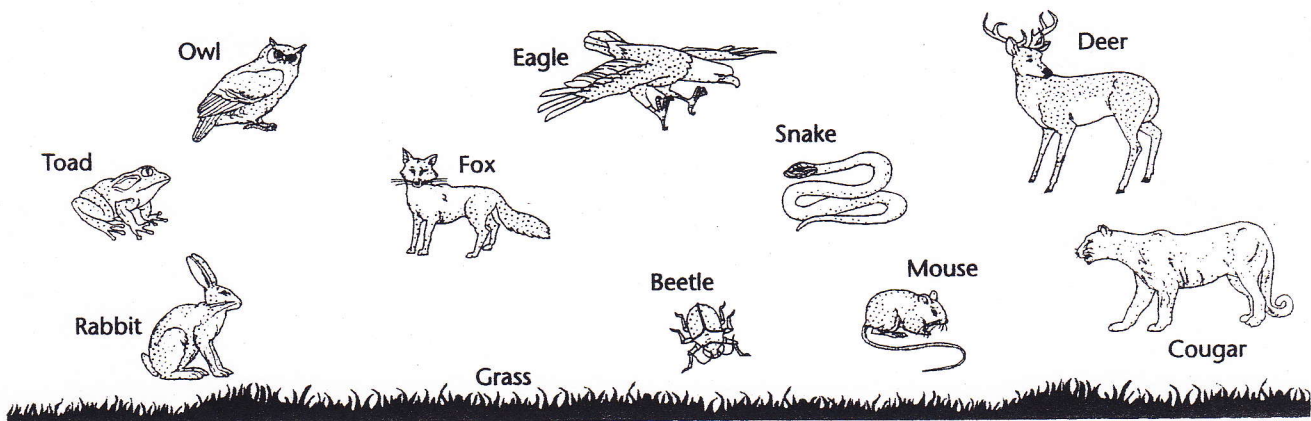
owls that eat mice and toads

foxes that eat rabbits and mice

cougars that eat deer

eagles that eat rabbits, snakes, and owls

The illustration below shows all these organisms. Create a food web by drawing arrows to indicate the flow of energy from one organism to another.



PART C Draw a diagram of an ecological pyramid with four trophic levels. Assume the producers in the pyramid supply 500,000 kilocalories of energy. Write the number of kilocalories that will be passed on to each higher trophic level at the appropriate location on your diagram.

