Name_____ Class_____ Date _____

Section 3–3 Cycles of Matter (pages 74–80)

Key Concepts

- How does matter move among the living and nonliving parts of an ecosystem?
- How are nutrients important in living systems?

Introduction (page 74)

1. What are the four elements that make up over 95 percent of the body in most organisms? _____

Recycling in the Biosphere (page 74)

2. How is the movement of matter through the biosphere different from the flow of energy? _____

_____

3. Matter moves through an ecosystem in _____.
4. What do biogeochemical cycles connect? _____

_____

The Water Cycle (page 75)

5. Water can enter the atmosphere by evaporating from the leaves of plants in the process of _____.
6. Circle the letter of each process involved in the water cycle.
   a. precipitation
   b. evaporation
   c. runoff
   d. fertilization

Nutrient Cycles (pages 76–79)

7. What are nutrients? _____

_____

8. What are the three nutrient cycles that play especially prominent roles in the biosphere?
   a. _____
   b. _____
   c. _____
9. What are three large reservoirs where carbon is found in the biosphere?
   a. As carbon dioxide gas in the _____
   b. As dissolved carbon dioxide in the _____
   c. As coal, petroleum, and calcium carbonate rock found _____
10. In what process do plants use carbon dioxide? _____

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11. Why do all organisms require nitrogen? _____

_____

12. What is nitrogen fixation? _____

_____

13. What is denitrification? _____

_____

14. What role does denitrification play in the nitrogen cycle? _____

_____

15. Circle the letter of each sentence that is true about the phosphorus cycle.

a. Phosphate is released as rocks and sediments wear down.

b. Plants absorb phosphate from the soil or from water.

c. Phosphorus is abundant in the atmosphere.

d. Organic phosphate cannot move through food webs.

16. Why is phosphorus essential to living things? _____

_____

_____

Nutrient Limitation (page 80)

17. What is the primary productivity of an ecosystem? _____

_____

18. If a nutrient is in short supply in an ecosystem, how will it affect an organism?

_____

19. When is a substance called a limiting nutrient? _____

_____

_____

20. Why do algal blooms occur? _____

_____

_____