

# Chemical Cycles Section Review

37.3

## The Big Idea

Nutrients are recycled in ecosystems. 37.3

## Concepts

- Unlike energy, nutrients are not replenished by the sun. They must be recycled.
- Photosynthesis and cellular respiration are the processes responsible for the recycling of carbon and oxygen. Carbon also may be stored in organisms, fossil fuels, or limestone.
- The burning of fossil fuels and the destruction of forests interfere with the carbon cycle.
- Nitrogen must be converted into compounds by nitrogen-fixing bacteria before it can be used by other organisms. Decomposers release nitrogen from animal wastes and dead organisms.
- The nitrogen removed from the soil by plants can be restored through crop rotation or fertilizers. If nitrogen fertilizer or sewage is washed into a body of water, the water can become choked with overnourished plants and algae.
- Solar radiation evaporates water, which returns to Earth's surface as precipitation. Water also cycles through living organisms.
- Human activities can result in both surface- and ground-water contamination.

## Words

carbon cycle    fossil fuel    nitrogen cycle    nitrogen fixation    denitrification  
 water cycle

## PART A

1. What are nutrients? How do they move through an ecosystem?

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2. What are the products of photosynthesis? How are these products used by other organisms?

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3. What are the products of cellular respiration? How are these products used by other organisms?

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4. How have humans affected the carbon cycle?

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Why are the roots of legumes important to the nitrogen cycle?

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6. What role do decomposers play in the nitrogen cycle? \_\_\_\_\_  
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7. Explain the process of denitrification. \_\_\_\_\_  
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8. How is water moved from Earth to the atmosphere? \_\_\_\_\_  
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9. How is water returned to Earth from the atmosphere? \_\_\_\_\_  
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10. How is water returned to the environment from animals? \_\_\_\_\_  
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11. How does water cycle through plants? \_\_\_\_\_  
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12. How do human activities affect the water cycle? \_\_\_\_\_  
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**PART B** Match each term in Column B with its description in Column A. Write the letter of the correct term on the line provided.

**COLUMN A**

- \_\_\_\_\_ 1. energy-rich organic compound
- \_\_\_\_\_ 2. chemical elements and compounds that organisms must have to live and grow
- \_\_\_\_\_ 3. conversion of nitrogen in the air to usable nitrogen compounds
- \_\_\_\_\_ 4. movement of water from Earth's surface to the atmosphere and back to the surface again
- \_\_\_\_\_ 5. process of returning nitrogen gas to the atmosphere
- \_\_\_\_\_ 6. pathway that nitrogen travels through the environment
- \_\_\_\_\_ 7. movement of carbon and oxygen through the environment

**COLUMN B**

- a. nutrient
- b. carbon cycle
- c. fossil fuel
- d. nitrogen cycle
- e. nitrogen fixation
- f. denitrification
- g. water cycle