Section 7.4 Reaction Rates
(pages 212–215)

This section discusses the factors that affect reaction rates.

Reading Strategy (page 212)

Building Vocabulary  As you read, complete the web diagram below with key terms from this section. For more information on this Reading Strategy, see the Reading and Study Skills in the Skills and Reference Handbook at the end of your textbook.

Reactions Over Time (page 212)

1. Any change that happens over time can be expressed as a(n) ________________.

2. What is a reaction rate? __________________________________________________________

Factors Affecting Reaction Rates (pages 213–215)

3. Is the following sentence true or false? One way to observe the rate of a reaction is to observe how fast products are being formed. ______________

4. Is the following sentence true or false? The rate of any reaction is a constant that does not change when the reaction conditions change. ______________

5. Generally, an increase in temperature will ______________ the reaction rate.

6. Is the following sentence true or false? Storing milk in a refrigerator stops the reactions that would cause the milk to spoil. ______________

7. How does an increase in surface area affect the exposure of reactants to one another? ______________

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8. Why does increasing the surface area of a reactant tend to increase the reaction rate?  

9. Stirring the reactants in a reaction mixture will generally ______________ the reaction rate.

10. Is the following sentence true or false? Increasing the concentration of the reactants will generally slow down a chemical reaction. ______________

11. Is the following sentence true or false? A piece of material dipped in a concentrated dye solution will change color more quickly than in a dilute dye solution. ______________

12. Why does an increase in pressure speed up the rate of a reaction involving gases? ______________

13. What is a catalyst? ______________

14. Circle the letters of the sentences that correctly identify why chemists use catalysts.
   a. to speed up a reaction
   b. to enable a reaction to occur at a higher temperature
   c. to slow down a reaction
   d. to enable a reaction to occur at a lower temperature

15. Is the following sentence true or false? Because a catalyst is quickly consumed in a reaction, it must be added to the reaction mixture over and over again to keep the reaction going. ______________

16. Identify where the catalyst V₂O₅ should go in the formula shown and write it in the correct location.

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2SO₂ + O₂ → 2SO₃
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17. Circle the letter of the correct answer. In the reaction represented by the equation 2H₂O₂ → 2H₂O + O₂, which substance acts as a catalyst?
   a. H₂O₂  
   b. Pt  
   c. H₂O  
   d. O₂

18. One way that a catalyst can lower the energy barrier of a reaction is by providing a surface on which the substance must come together.