

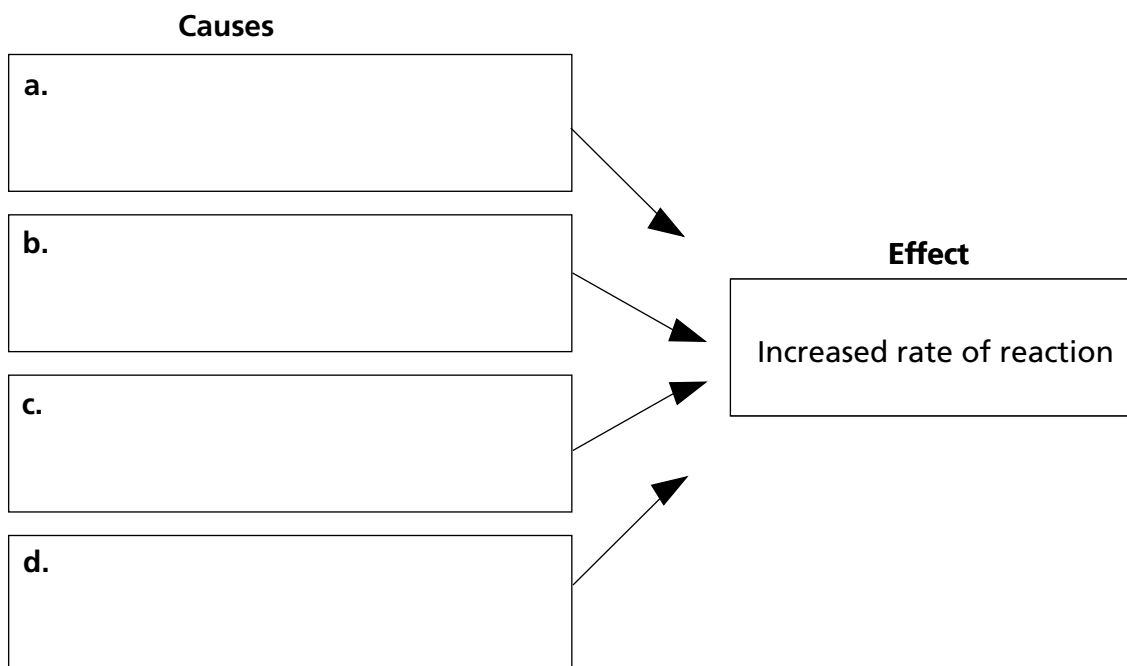
**Chemical Reactions** ▪ *Guided Reading and Study*

## Controlling Chemical Reactions

*This section explains how energy is related to chemical reactions. It also describes how the rates of chemical reactions can be controlled.*

### Use Target Reading Skills

*As you read, identify the factors that can cause the rate of a chemical reaction to increase. Write the information in the graphic organizer below.*



### Energy and Reactions

1. The \_\_\_\_\_ is the minimum amount of energy needed to start a chemical reaction.
2. Is the following sentence true or false? All chemical reactions need a certain amount of activation energy to get started.  
\_\_\_\_\_
3. In a reaction that makes water from hydrogen gas and oxygen gas, where does the activation energy come from?  
\_\_\_\_\_  
\_\_\_\_\_
4. A reaction that releases energy is called a(n) \_\_\_\_\_.
5. A reaction that absorbs energy is called a (n) \_\_\_\_\_.

**Chemical Reactions** ▪ *Guided Reading and Study*

**Controlling Chemical Reactions** *(continued)*

6. Why does an exothermic reaction need activation energy?

---

---

---

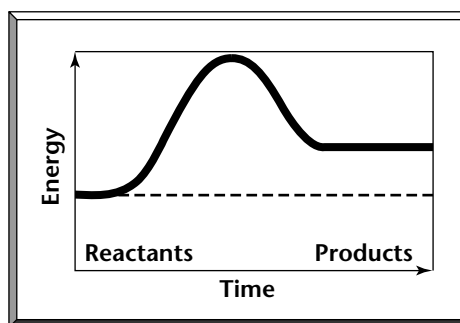
---

---

7. On the graph below, how does the energy of the products compare with the energy of the reactants?

---

---



8. Label the graph above as either an exothermic or endothermic reaction.
9. What part of the graph in question 7 represents the activation energy for the reaction?

---

---

**Rates of Chemical Reactions**

10. What are five factors that affect the rate of a chemical reaction?

---

---

---

11. Why does surface area of a reactant influence the rate of the reaction?

---

---

---

**Chemical Reactions** ▪ *Guided Reading and Study*

12. In what way is temperature related to chemical reaction rates?

---

---

13. Circle the letter of each of the following that would increase the rate of a reaction.

- |                               |                               |
|-------------------------------|-------------------------------|
| a. Add heat.                  | b. Decrease the surface area. |
| c. Increase the surface area. | d. Reduce heat.               |

14. The amount of substance in a given volume is called \_\_\_\_\_.

15. To increase the rate of a reaction, why would you increase the concentration of the reactants?

---

---

---

16. Is the following sentence true or false? Another way to control the rate of a reaction is to change the activation energy needed.

---

17. What is a catalyst?

---

---

---

18. Is the following sentence true or false? Catalysts are always permanently changed in a reaction. \_\_\_\_\_

19. A biological catalyst is called a(n) \_\_\_\_\_.

20. Why must living things rely on thousands of catalysts for chemical reactions necessary for life?

---

---

---

---

Name \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

**Chemical Reactions** ▪ *Guided Reading and Study*

**Controlling Chemical Reactions** *(continued)*

21. What is an inhibitor?

---

---

---

22. How do most inhibitors work?

---

---