

CHAPTER 9 STUDY GUIDE**Section 9.2 Classifying Chemical Reactions**

In your textbook, read about synthesis, combustion, decomposition, and replacement reactions.

Assume that Q, T, X, and Z are symbols for elements. Match each equation in Column A with the reaction type it represents in Column B.

Column A

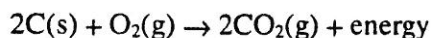
- _____ 1. $Q + XZ \rightarrow X + QZ$
_____ 2. $Q + Z \rightarrow QZ$
_____ 3. $QT \rightarrow Q + T$
_____ 4. $QT + XZ \rightarrow QZ + XT$

Column B

- a. decomposition
b. double-replacement
c. single-replacement
d. synthesis

Answer the following questions.

5. Does the following equation represent a combustion reaction, a synthesis reaction, or both? Explain your answer.



6. Why is it sometimes incorrect to state that a compound is broken down into its component elements in a decomposition reaction?

7. When soap is added to hard water, solid soap scum forms. When water is added to baking powder, carbon dioxide bubbles form. When lemon juice is added to household ammonia solution, water is one of the products. Tell how you know a double-replacement reaction has occurred in each case.

8. Explain how you can use an activity series to determine whether a single-replacement reaction will occur.

CHAPTER 9 STUDY GUIDE**Section 9.2 *continued***

In your textbook, read about the activity series for metals and halogens.

Examine each of the following pairs of potential reactants. Use Figure 9.13 in your textbook to help you decide whether or not a reaction would occur. If a reaction occurs, write the balanced equation. If no reaction occurs, write *NR*.

9. calcium and water _____
10. magnesium and water _____
11. rubidium and lithium chloride _____
12. potassium and aluminum oxide _____
13. silver and calcium nitrate _____
14. fluorine and potassium iodide _____
15. magnesium bromide and chlorine _____
16. copper and iron(III) sulfate _____

Match each example of a chemical reaction in Column A to the type(s) listed in Column B. List all types from Column B that apply.

Column A

- _____ 17. Aluminum lawn furniture becomes coated with a layer of aluminum oxide when it sits out in the air.
- _____ 18. Chlorine gas is bubbled through a calcium bromide solution. The solution turns brown, the color of bromine.
- _____ 19. Lime is added to acid water in a lake. Water and a salt form.
- _____ 20. Propane is a common household fuel. When burned, water and carbon dioxide are produced.
- _____ 21. Steel wool burns, forming an iron oxide.
- _____ 22. When an electric current is passed through molten potassium bromide, potassium and bromine form.
- _____ 23. When solutions of sodium iodide and lead nitrate are combined, a yellow solid forms.

Column B

- a. combustion
- b. decomposition
- c. double-replacement
- d. single-replacement
- e. synthesis