

## Chapter 7 Chemical Reactions

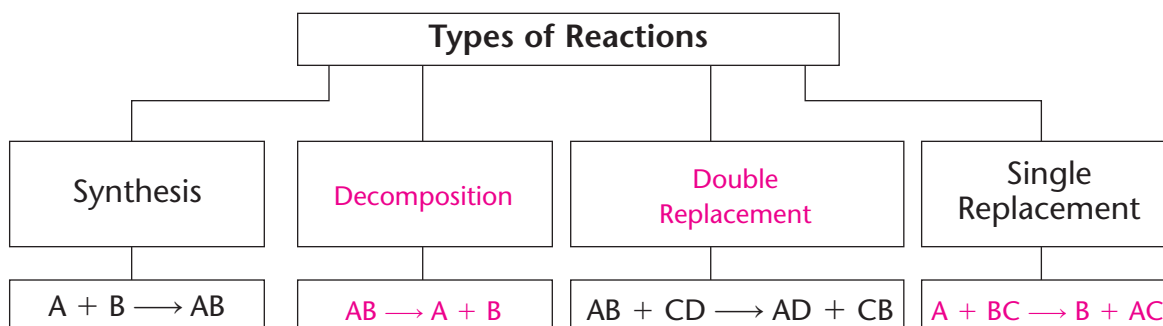
## Section 7.2 Types of Reactions

(pages 199–205)

*This section discusses how chemical reactions are classified into different types.*

## Reading Strategy (page 199)

**Previewing** Skim the section and begin a concept map like the one below that identifies types of reactions with a general form. As you read, add the general form of each type of reaction. 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.



## Classifying Reactions (pages 199–204)

- Circle the letter of each equation that represents a synthesis reaction.
  - $2\text{Na} + \text{Cl}_2 \longrightarrow 2\text{NaCl}$
  - $2\text{NaCl} \longrightarrow 2\text{Na} + \text{Cl}_2$
  - $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$
- Is the following sentence true or false? A decomposition reaction is the opposite of a synthesis reaction. true
- Write the equation for the decomposition of calcium carbonate,  $\text{CaCO}_3$ , into calcium oxide,  $\text{CaO}$ , and carbon dioxide.  $\text{CaCO}_3 \longrightarrow \text{CaO} + \text{CO}_2$
- Circle the letter of the correct answer. Copper reacts with silver nitrate in a single-replacement reaction. What are the products of this reaction?
  - copper(II) nitride and silver oxide
  - copper(II) nitrate and silver
  - copper, nitrogen, and silver oxide

**Chapter 7 Chemical Reactions**

5. What is a double-replacement reaction? A double-replacement reaction is a reaction in which two different compounds exchange positive ions and form two new compounds.
6. Circle the letter of the correct answer. Calcium carbonate,  $\text{CaCO}_3$ , reacts with hydrochloric acid,  $\text{HCl}$ , in a double-replacement reaction. What are the products of this reaction?
- a. calcium chloride,  $\text{CaCl}_2$ , and carbonic acid,  $\text{H}_2\text{CO}_3$
- b. calcium hydride,  $\text{CaH}_2$ , chlorine,  $\text{Cl}_2$ , and carbon dioxide,  $\text{CO}_2$
- c. calcium hydrogen carbonate,  $\text{Ca}(\text{HCO}_3)_2$ , and chlorine,  $\text{Cl}_2$
7. Is the following sentence true or false? A combustion reaction is a reaction in which a substance reacts with carbon dioxide, often producing heat and light. false
8. Methane,  $\text{CH}_4$ , burns in oxygen to form carbon dioxide and water. Write the balanced equation for this reaction.  $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
9. Is the following sentence true or false? The reaction that forms water can be classified as either a synthesis reaction or a combustion reaction. true

**Reactions as Electron Transfers (pages 204–205)**

10. An oxidation-reduction reaction is a reaction in which electrons are transferred from one reactant to another.
11. Calcium reacts with oxygen to form calcium oxide. Which reactant is oxidized in this reaction? calcium
12. Is the following sentence true or false? When calcium reacts with oxygen, each calcium atom gains two electrons and becomes a calcium ion with a charge of 2-. false
13. Is the following sentence true or false? Oxygen must be present in order for an oxidation-reduction reaction to take place. false
14. The process in which an element gains electrons during a chemical reaction is called \_\_\_\_\_. Circle the correct answer.
- decomposition      oxidation      reduction