

Chapter 7 Chemical Reactions

Section 7.1 Describing Reactions**(pages 192–198)**

This section discusses the use of chemical equations and how to balance them. It also demonstrates the use of calculations in chemistry.

Reading Strategy (page 192)

Monitoring Your Understanding Preview the Key Concepts, topic headings, vocabulary, and figures in this section. List two things you expect to learn. After reading, state what you learned about each item you listed. 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.

What I Expect to Learn	What I Learned

Chemical Equations (pages 192–193)

- Is the following sentence true or false? The new substances formed as a result of a chemical reaction are called products. _____
- Circle the letter of each sentence that is a correct interpretation of the chemical equation $C + O_2 \longrightarrow CO_2$.
 - Carbon and oxygen react and form carbon monoxide.
 - Carbon and oxygen react and form carbon dioxide.
 - Carbon dioxide yields carbon and oxygen.
 - The reaction of carbon and oxygen yields carbon dioxide.
- Is the following sentence true or false? The law of conservation of mass states that mass is neither created nor destroyed in a chemical reaction. _____
- Circle the letter of the correct answer. According to the equation $C + O_2 \longrightarrow CO_2$, how many carbon atoms react with 14 molecules of oxygen to form 14 molecules of carbon dioxide?

a. 1	b. 7
c. 14	d. 28
- In the reaction represented by the equation $C + O_2 \longrightarrow CO_2$, the mass of carbon dioxide produced equals _____

Chapter 7 Chemical Reactions

Balancing Equations (pages 194–195)

6. Is the following sentence true or false? A chemical equation must be balanced in order to show that mass is conserved during a reaction. _____
7. Circle the letter of the name given to the numbers that appear before the formulas in a chemical equation.
- a. subscripts b. mass numbers
c. atomic numbers d. coefficients
8. Is the following sentence true or false? Because the equation $\text{N}_2\text{H}_4 + \text{O}_2 \longrightarrow \text{N}_2 + \text{H}_2\text{O}$ has two nitrogen atoms on each side, the equation is balanced. _____

Counting With Moles (pages 195–196)

9. Chemists use a counting unit called a(n) _____ to measure amounts of a substance because chemical reactions often involve large numbers of small particles.
10. Circle the letter of the correct answer. If one carbon atom has an atomic mass of 12.0 amu and one oxygen atom has an atomic mass of 16.0 amu, what is the molar mass of carbon dioxide?
- a. 28.0 amu b. 44.0 amu
c. 28.0 g d. 44.0 g
11. Circle the letter of the correct answer. To convert grams of carbon dioxide to moles of carbon dioxide, you must multiply by which conversion factor?
- a. $\frac{44.0 \text{ g CO}_2}{1 \text{ mol CO}_2}$ b. $\frac{1 \text{ mol CO}_2}{44.0 \text{ g CO}_2}$
c. $\frac{28.0 \text{ g CO}_2}{1 \text{ mol CO}_2}$ d. $\frac{1 \text{ mol CO}_2}{28.0 \text{ g CO}_2}$

Chemical Calculations (pages 197–198)

12. Complete the table.

Formation of Water			
Equation	2H_2	+	$\text{O}_2 \longrightarrow 2\text{H}_2\text{O}$
Amount	2 mol		1 mol
Molar Mass	2.0 g/mol		18.0 g/mol
Mass (Moles \times Molar Mass)			32.0 g
			36.0 g

13. Circle the letter of the correct answer. One mole of oxygen has a mass of 32 grams. What is the mass of four moles of oxygen?
- a. 128 g b. 144 g
c. 128 amu d. 144 amu