

CHAPTER **12** STUDY GUIDE FOR CONTENT MASTERY

Stoichiometry

Section 12.1 What is stoichiometry?

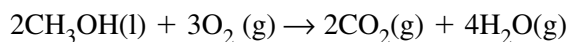
In your textbook, read about stoichiometry and the balanced equation.

For each statement below, write *true* or *false*.

- _____ 1. The study of the quantitative relationships between the amounts of reactants used and the amounts of products formed by a chemical reaction is called stoichiometry.
- _____ 2. Stoichiometry is based on the law of conservation of mass.
- _____ 3. In any chemical reaction, the mass of the products is less than the mass of the reactants.
- _____ 4. The coefficients in a chemical equation represent not only the number of individual particles but also the number of moles of particles.
- _____ 5. The mass of each reactant and product is related to its coefficient in the balanced chemical equation for the reaction by its molar mass.

Complete the table below, using information represented in the chemical equation for the combustion of methanol, an alcohol.

methanol + oxygen → carbon dioxide + water



Substance	Molar Mass (g/mol)	Number of Molecules	Number of Moles (mol)	Mass (g)
6. Methanol	32.05			
7. Oxygen gas	32.00			
8. Carbon dioxide	44.01			
9. Water	18.02			

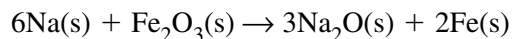
- 10.** What are the reactants? _____
- 11.** What are the products? _____
- 12.** What is the total mass of the reactants? _____
- 13.** What is the total mass of the products? _____
- 14.** How do the total masses of the reactants and products compare? _____

Section 12.1 *continued*

In your textbook, read about mole ratios.

Answer the questions about the following chemical reaction.

sodium + iron(III) oxide \rightarrow sodium oxide + iron



15. What is a mole ratio?

16. How is a mole ratio written?

17. Predict the number of mole ratios for this reaction. _____

18. What are the mole ratios for this reaction?

19. What is the mole ratio relating sodium to iron? _____

20. What is the mole ratio relating iron to sodium? _____

21. Which mole ratio has the largest value? _____