CHAPTER 6 PRACTICE QUESTIONS

Directions: Review what you just learned in this chapter and test your comprehension with these practice questions. Answers can be found directly after the questions.

Moles

1. Which of the following has the greatest number of particles?

A) 1.0 mol Al

B) 1.0 mol Ag

C) 1.0 mol Cu

D) All of the choices above have the same number of particles.

Mole conversions

2. If you have 1.0 mole of each of the following compounds, which compound has the greatest mass: nickel (II) oxide, aluminum nitride, or barium hydroxide?

3. Determine the number of molecules in 42.5 g of carbon monoxide.

Empirical vs. Molecular Formulas

4. A sample of liquid was founded to contain 37.5% carbon, 12.5% hydrogen, and 50.0% oxygen. Determine the empirical formula of this sample.

5. Fructose, a common sugar found in fruit, was experimentally determined to have the following composition: 40.00% carbon, 6.72% hydrogen, and 53.28% oxygen. The molar mass of fructose is 180.16 g/mol. What is the molecular formula of fructose?

Stoichiometry

6. Use the following balanced equation to answer the following questions.

$2\ Al\ (s) + 3\ I_2\ (s) \rightarrow 2\ AlI_3\ (s)$

a. What is the molar ratio of solid iodine to aluminum iodide? Express your answer as a conversion factor.

b. If you have 4.0 grams of aluminum, how many grams of solid iodine will be needed to completely react with the aluminum?

Limiting Reactant

7. Solid sulfur and oxygen gas react to produce sulfur trioxide gas.

a. Write out the formula for the chemical reaction described above.

b. How many grams of sulfur trioxide are produced by the reaction of 5.0 grams of oxygen gas with 6.0 grams of sulfur? Make sure to determine your limited reactant!

DRILL

Combined Gas Law

8. A sample of an ideal gas has a volume of 0.750 L at 25 °C and 1.20 atm pressure. What is its volume at 75 °C and 3.60 atm?

Ideal Gas Law

9. What is the volume of 5.40 mol of gas at 37.3 °C and 1.25 atm of pressure?