

**Chapter 10 Packet – GEN CHEM**

Chemistry, Mrs. Cook

Name: \_\_\_\_\_

**Assignment 1 – Single Step Conversions**

**Due Date:** \_\_\_\_\_

*Draw the molar conversions chart in this space:*

- 1) Convert 0.89 mol of  $\text{CaCl}_2$  to grams.
  
- 2) How many moles are in 158.1 grams of  $\text{PbSO}_4$ ?
  
- 3) Find the mass of 1.112 mol of HF. ***Hint:*** What unit is “mass” measured in? grams!
  
- 4) What are the three types of “particles” in chemistry?  
\_\_\_\_\_
  
- 5) Determine the number of atoms that are in 0.58 mol of Se.
  
- 6) How many moles of barium nitride ( $\text{Ba}_3\text{N}_2$ ) are there in  $4.7 \times 10^{24}$  formula units?

- 7) Determine the number of molecules that are in 1.25 mol of O<sub>2</sub>.
- 8) What does "STP" stand for? \_\_\_\_\_
- 9) What volume will 0.37 mol of N<sub>2</sub> gas occupy at STP?
- 10) A canister with a volume of 69.4 L contains how many moles of oxygen at STP?

**Assignment 2 – Multi-Step Conversions**

**Due Date:** \_\_\_\_\_

*Refer to the chart in your notes to solve these problems.*

- 11) What mass of C<sub>2</sub>H<sub>6</sub> is in  $6.45 \times 10^{24}$  molecules?
- 12) How many formula units are in 5.1 g of TiO<sub>2</sub>?
- 13) What mass of helium will occupy 5.6 L at STP?

- 14) What volume would 46.8 grams of  $\text{Cl}_2$  occupy at STP?
- 15) What volume would  $3.33 \times 10^{25}$  atoms of krypton occupy at STP?
- 16) How many molecules are there in 12 L of carbon dioxide at STP?
- 17) What is the mass of  $3.62 \times 10^{24}$  molecules of methanol ( $\text{CH}_3\text{OH}$ )?

Review Questions for Assignment 2

- 18) How many particles are in a mole? \_\_\_\_\_
- 19) How many liters are in one mole of a gas? \_\_\_\_\_
- 20) What are the three types of "particles" in chemistry?  
\_\_\_\_\_
- 21) What are the units for molar mass?

**Assignment 3 – Percent Composition**

**Due Date:** \_\_\_\_\_

- 22) What is the percent composition of each element in  $\text{GaBr}_3$ ?
- 23) What is the percent composition of each element in  $\text{Al}_2(\text{CO}_3)_3$ ?
- 24) What is the percent composition of phosphorus in  $\text{Mg}_3(\text{PO}_4)_2$ ?

***Relationships between Empirical and Molecular Formulas***

- 25) What is the molecular formula of a compound that has a molar mass of 132.24 g/mol and an empirical formula of  $\text{C}_3\text{H}_8$ ?
- 26) A molecular compound has a molar mass of 128.14 g/mol and the empirical formula  $\text{SO}_2$ . What is the molecular formula?
- 27) A compound has a molar mass of 283.6 g/mol and its empirical formula is  $\text{P}_2\text{O}_5$ . What is its molecular formula?
- 28) What is the molecular formula of a substance that has an empirical formula of  $\text{NO}_2$  and a molecular mass of 138 g/mol?