Stoichiometry Calculation Practice Worksheet

1. Calculate the number of moles of NaOH that are needed to react with 500.0 g of H_2SO_4 according to the following equation:

$$H_2SO_4 + 2\ NaOH \rightarrow Na_2SO_4 + 2\ H_2O$$

ANS: 10.19 mol

2. Calculate the mass of NH_3 that can be produced from the reaction of 125 g of NCl_3 according to the following equation:

$$NCl_3 + 3\ H_2O \rightarrow NH_3 + 3\ HOCl$$

ANS: 17.7 g

3. Identify the limiting reactant and determine the mass of CO_2 that can be produced from the reaction of 25.0 g of C_3H_8 with 75.0 g of O_2 according to the following equation:

$$C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$$

ANS: 61.9 g

4. How many grams of SO_2 are produced when 152 g of CS_2 react with 48.0 g of O_2 according to the following equation:

$$CS_2 + 3\ O_2 \rightarrow CO_2 + 2\ SO_2$$

ANS: 64.1 g

5. When 50.0 g of $MgCO_3$ react completely with H_3PO_4, as shown below,15.8 g of CO_2 are produced. What is the percent yield for this reaction?

$$2\ H_3PO_4 + 3\ MgCO_3 \rightarrow Mg_3(PO_4)_2 + 3\ CO_2 + 3\ H_2O$$

ANS: 60.5%

6. How many grams of P_4O_{10} can be produced from the reaction of 52.9 g of $KClO_3$ with excess phosphorous as shown below:

$$KClO_3\ (s) + P_4\ (s) \rightarrow P_4O_{10}\ (s) + KCl\ (s) \qquad \text{(unbalanced)}$$

ANS: 36.8 g

7. Given the equation below, determine the limiting reactant, and calculate how many grams of Cu can be formed from the reaction of 18.1 g of NH_3 and 90.4 g of CuO.

$$2\ NH_3\ (g) + 3\ CuO\ (s) \rightarrow N_2\ (g) + 3\ Cu\ (s) + 3\ H_2O\ (g)$$

ANS: 72.2 g

8. When 50.0 g of $MgCO_3$ react completely with H_3PO_4, as shown below,15.8 g of CO_2 is produced. Determine the theoretical and percent yield for this reaction?

$$2\ H_3PO_4 + 3\ MgCO_3 \rightarrow Mg_3(PO_4)_2 + 3\ CO_2 + 3\ H_2O$$

ANS: 26.1 g; 60.5%

9. What mass of F_2 is needed to produce 120.0 g of PF_3, as shown, if the reaction has a 78.1% yield?

$$P_4\ (s) + 6\ F_2\ (g) \rightarrow 4\ PF_3$$

ANS: 99.6 g