Name: _____ Period: _____

Chemistry 11

Stoichiometry Worksheet #3

Directions: Answer in the space provided. Be sure to show ALL your work. Please highlight your answer for each question. Watch for sig figs…and Aliens ;)

1. Given the following equation:

$$Al_2(SO_3)_3 + 6\ NaOH \Longrightarrow 3\ Na_2SO_3 + 2\ Al(OH)_3$$

   a. If 10.0 g of $Al_2(SO_3)_3$ is reacted with 10.0 g of NaOH, determine the limiting reagent

   b. Determine the number of grams of Na_2SO_3 produced

   c. Determine the number of grams of excess reagent left over in the reaction

   d. Calculate how many grams of $Al(OH)_3$ are produced

Name: _____ Period: _____

2. Given the following equation:

$$4\ Al_2O_3 + 9\ Fe \Longrightarrow 3\ Fe_3O_4 + 8\ Al$$

a. If 25.4 g of Al_2O_3 is reacted with 10.2 g of Fe, determine the limiting reagent

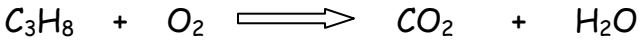
b. Determine the mass, in grams, of Al produced

c. Determine the number of grams of Fe_3O_4 produced

d. Determine the number of grams of excess reagent left over in the reaction

Name: _____ Period: _____

3. Given the following reaction:



If you start with 14.8 g of C_3H_8 and 3.44 g of O_2,

a. Determine the limiting reagent

b. Determine the grams of carbon dioxide produced

c. Determine the grams of H_2O produced

d. Determine the number of grams of excess reagent left

Name: _____ Period: _____

4. Write the balanced equation for the reaction of lead (II) nitrate with sodium iodide to form sodium nitrate and lead (II) iodide

   a. If you start with 25.0 grams of lead (II) nitrate and 15.0 grams of sodium iodide, what is the limiting reagent?

   b. How much excess reactant will be left over from the reaction

5. When a sample of malachite ore containing 215.0 g of malachite, ($Cu_2(OH)_2CO_3$) was heated, the products were copper (II) oxide, carbon dioxide and water.

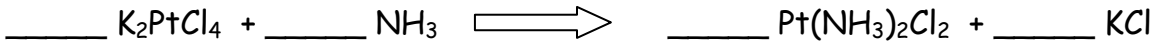
$$Cu_2(OH)_2CO_3 \Longrightarrow CO_2 + 2\ CuO + H_2O$$

   a. What is the theoretical yield of CuO in grams?

   b. If the reaction had an 84.0% yield, how many grams of CuO actually formed?

Name: _____ Period: _____

6. Given the following equation:



   a. Balance the equation.

   b. Determine the theoretical yield of KCl if you start with 34.5 grams of NH_3. (ASSume an excess of K_2PtCl_4).

   c. Starting with 34.5 g of NH_3, you isolated 76.4 g of KCl. What is the percent yield?

7. Given the following equation:

$$H_3PO_4 + 3\ KOH \text{ ------> } K_3PO_4 + 3\ H_2O$$

   If 49.0 g of H_3PO_4 is reacted with excess KOH, determine the percent yield of K_3PO_4 if you isolate 49.0 g of K_3PO_4.

Name: _____ Period: _____

8. Consider the following reaction:

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

   a. If I start with 5.00 grams of C_3H_8, what is my theoretical yield of water? (ASSume an excess of O_2)

   b. I got a percent yield of 75.0%. How many grams of water did I make?

9. Consider the following reaction:

$$LiOH + KCl \rightarrow LiCl + KOH$$

   a. What is the theoretical yield of lithium chloride if 20.0 grams of lithium hydroxide are reacted? (Assume an excess of KCl)

   b. 6.00 grams of lithium chloride were actually produced. What is the percent yield?