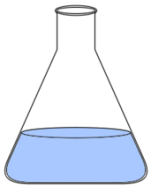
Name:	Date:



Limiting Reactants WS #1

Directions: Balance the chemical reactions. Use Stoichiometry to solve the following limiting reagent problems. Show all work with units. Box the final answer.

1. Given the following reaction:

$$____\ C_3H_8\ (g) + ____\ O_2\ (g) \rightarrow ____\ CO_2\ (g) + ____\ H_2O\ (g)$$

   If you start with 3.95 g of C_3H_8 and 3.44 g of O_2, determine the limiting reactant and the theoretical yield of CO_2.

2. Given the following reaction:

$$____\ Al_2(SO_3)_3\ (aq) + ____\ NaOH\ (aq) \rightarrow ____\ Na_2SO_3\ (aq) + ____\ Al(OH)_3\ (s)$$

   If 10.0 g of $Al_2(SO_3)_3$ is reacted with 10.0 g of NaOH, determine the limiting reactant and the theoretical yield of the solid.

3. Given the following reaction:

$$_____\ Al_2O_3\,(aq) + _____\ Fe\,(s) \rightarrow _____\ Fe_3O_4\,(aq) + _____\ Al\,(s)$$

If 25.4 g of Al_2O_3 is reacted with 10.2 g of Fe, determine the limiting reactant and the theoretical yield of Al.

4. Solid calcium carbonate, $CaCO_3$, can remove sulfur dioxide from waste gases by the reaction (balanced as written):

$$CaCO_3 + SO_2 + \text{other reactants} \rightarrow CaSO_3 + \text{other products}$$

a. In an experiment, 255 g of $CaCO_3$ was exposed to 135 g of SO_2 in the presence of an excess amount of the other chemicals required for the reaction. What is the theoretical yield of $CaSO_3$?

b. If only 198 g of $CaSO_3$ was isolated from the products, what was the percentage yield of $CaSO_3$ in this experiment?

c. How much of the excess reagent is left?