UNIT 8 HW#4 Name_____ Block #____

Stoichiometry – Limiting Reactant and Percent Yeild

[Must Show All Work]

Problem #1

Lithium nitride reacts with water or moisture in the air to generate corrosive lithium hydroxide and toxic ammonia gas, according to the following reaction:

$$\mathbf{Li_3N\ (s) + 3\ H_2O\ (l) \rightarrow NH_3\ (g) + 3\ LiOH\ (aq)}$$

1. If 10.0 grams of each reactant are used, which one is the limiting reactant?

2. What is the mass of the theoretical yield of ammonia?

3. How much of the excess reactant is left over after the reaction is complete?

4. Suppose a chemist performed this reaction and only produced 2.95 grams of ammonia. Calculate the percent yield based on this result.

Problem #2

Ethanol burns in the presence of oxygen to produce carbon dioxide and water vapor, according to the following reaciton:

$$\mathbf{2\ C_2H_8O\ (l) + 7\ O_2\ (g) \rightarrow 4\ CO_2\ (g) + 8\ H_2O\ (g)}$$

1. Determine the limiting reactant if **25 g** of ethanol reacts with **25 Liters** of oxygen gas.

2. What is the volume in liters for the theoretical yield of carbon dioxide?

3. How much of the excess reactant is left over after the reaction is complete?

4. Calculate the percent yield if the reaction only produced 13.87 L CO_2.