Ch3/ Worksheet/Stoichiometry **Name:** _____

Show all work. Write the equation and balance it where necessary.

1. How many grams of sodium fluoride (used in water fluoridation and manufacture of insecticides) are needed to form 485 g of sulfur tetrafluoride?

$$3SCl_2(l) + 4NaF(s) \rightarrow SF_4(g) + S_2Cl_2(l) + 4NaCl(s)$$

a) 1940 g b) 1510 g c) 754 g d) 205 g e) 51.3 g

2. What mass, in grams, of sodium carbonate is required for complete reaction with 8.35g of nitric acid to produce sodium nitrate, carbon dioxide, and water?

a) 28.1 g b) 14.04 g c) 4.96 g d) 7.02 g e) 400.0 g

3. Ammonia is produced by the reaction: $3\ H_2(g) + N_2(g) \rightarrow 2\ NH_3(g)$

(a) If $N_2(g)$ is present in excess and 55.6 g of $H_2(g)$ reacts, what is the *theoretical yield* of $NH_3(g)$?
(b) What is the *percent yield* if the actual yield of the reaction is 159 g of $NH_3(g)$?

4. When 61.3 g Cl_2 is reacted with excess, 119.3 g PCl_5 is formed. What is the percent yield for the PCl_5 formed? (Hint: calculate the theoretical yield of PCl_5 first.)

$$PCl_3(g) + Cl_2(g) \rightarrow PCl_5(g)$$

a) 195% b) 85.0% c) 66.3% d) 51.4% e) 43.7%

5. Write the following equation in symbol form.
Iron (II) sulfide + hydrochloric acid ⟶ iron (II) chloride + dihydrogen sulfide
How much dihydrogen sulfide will be synthesized from 8.5 g iron (II) sulfide? What is the percent yield if 2.6 g of dihydrogen sulfide is actually obtained after the reaction?