Name _____   Period _____

Honors Chemistry
Stoichiometry Practice Test

Form P

1. The production of hydrochloric acid can be attained by the following reaction:

$$\_\_\_H_2SO_4(l) + \_\_\_NaCl(s) \rightarrow \_\_\_HCl(g) + \_\_\_NaHSO_4(s)$$
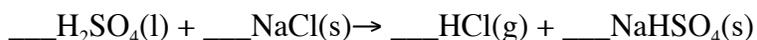
a. How many grams of HCl can be produced by the reaction of 100.0 g NaCl?

a. _____

b. How many grams of HCl can be produced by 100.0 g of H_2SO_4?

b. _____

c. Who is the limiting reactant?

c. _____

d. How much H_2SO_4 is left after the reaction?

d. _____

e. If 35.10 grams of HCl is actually produced what is the percent yield?

e. _____

2. During certain industrial processes you must remove excess mercury from a solution by precipitation. One possible reaction is:

$$\_\_Hg(NO_3)_2 + \_\_Na_2S \rightarrow \_\_HgS + \_\_ NaNO_3$$
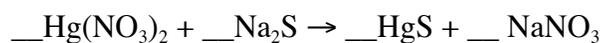
a. Balance the equation in the spaces provided.

b. How much HgS can be formed from 50.00 mL of 0.100M $Hg(NO_3)_2$?

b. _____

c. How much HgS can be formed from 20.00 mL of 0.100M Na_2S?

c. _____

d. What is the excess reactant?

d. _____

e. How much of the excess reactant is left over? Answer in grams.

e. _____

3. HCN gas and liquid Water are produced by the reaction of ammonia, oxygen gas and methane(CH_4).

a. Write a balanced equation for the reaction:

_____

b. How much HCN can be made by the reaction of 35.00 g of ammonia?

b. _____

c. How much HCN can be made by the reaction of 35.00 g of Methane?

c. _____

d. Which is the limiting reactant if you have excess oxygen?

d. _____

e. What is the percent yield if you actually get 53.22 g of HCN?

e. _____

4. Caffeine is a stimulant that is considered to be highly addictive and a potential risk for heart attack if used in excess. It has a molecular weight of 194 grams per mole. Analysis shows that caffeine contains 49.5% carbon, 5.2% hydrogen, 28.8% nitrogen, and some oxygen. What are the empirical and molecular formulas of caffeine?

5. The compound $CrSO_4 * XH_2O$ is analyzed by heating in a crucible. The following data was obtained:

Mass of empty crucible	40.000 g
Mass of crucible and hydrate	41.912 g
Mass after complete heating	41.032 g

What is the value of X in the formula?