**Stoichiometry Homework 2**

1. Na2SiO3 (s) + 8 HF(aq) 🡪  H2SiF6 (aq) + 2 NaF(aq) + 3 H2O (l)

a. How many moles of HF are needed to react with 0.300 mol of Na2SiO3?

b. How many grams of NaF form when 0.500 mol of HF reacts with excess Na2SiO3?

c. How many grams of Na2SiO3 can react with 0.800 g of HF?

2. C6H12O6 (aq) 🡪  2 C2H5OH (aq) + 2 CO2 (g)

a. How many moles of CO2 are produced when 0.400 mol of C6H12O6 reacts in this fashion?

b. How many grams of C6H12O6 are needed to form 7.50 g of C2H5OH?

c. How many grams of CO2 form when 7.50 g of C2H5OH are produced?

3. Fe2O3 (s) + CO (g) 🡪  Fe(s) + CO2 (g)    (unbalanced!)

a. Calculate the number of grams of CO that can react with 0.150 kg of Fe2O3. (note: 1 kilogram = 1000 grams)

b. Calculate the number of grams of Fe and the number of grams of CO2 formed when 0.150 kg of Fe2O3  reacts.

4. 2 NaOH (s) + CO2 (g)  🡪  Na2CO3 (s) + H2O (l)

a. Which reagent is the limiting reactant when 1.85 mol NaOH and 1.00 mol CO2 are allowed to react?

b. How many moles of Na2CO3 can be produced?

5. C6H6 + Br2 🡪 C6H5Br + HBr

a. What is the theoretical yield of C6H5Br in this reaction when 30.0 g of C6H6 reacts with 65.0 g of Br2?

b. If the actual yield of C6H5Br was 56.7 g, what is the percent yield?