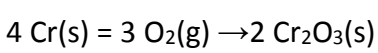
NAME_____

CHEM1301 Stoichiometry Homework #11

Due: Friday, October 31

Show your work!

1. For the reaction shown, find the limiting reactant for each of the initial quantities of reactants.



$$4\ Cr(s) = 3\ O_2(g) \rightarrow 2\ Cr_2O_3(s)$$

a) 1 mol Cr; 1 mol O_2

b) 4 mol Cr; 5 mol O_2

c) 12.4 mol Cr; 10.3 mol O_2

2. Consider the reaction below.

$$4\ HCl\ (g) + O_2\ (g) \rightarrow 2\ H_2O\ (g) + 2\ Cl_2\ (g)$$

a) If 5.76 g HCl and 4.32g O_2 react, what is the theoretical yield of Cl_2 and which is the limiting reactant?

b) You run the experiment with the masses given in part a). If the percent yield for Cl_2 is 55.4% for the reaction above, how much Cl_2 would you expect to recover in the lab?

3. Consider the reaction below:

$$2NiS_2 + 5\ O_2 \rightarrow 2\ NiO + 4\ SO_2$$

When 11.2 g of NiS_2 react with 5.43 g of O_2, 4.86 g of NiO are recovered. Determine the limiting reactant, the theoretical yield, and the percent yield for the reaction.

4. Sodium peroxide (N_2O_2) reacts with water to form sodium hydroxide and oxygen gas. Write the balanced equation for the reaction. Determine how much oxygen in grams is formed when 32.09 g Na_2O_2 are reacted completely.