Chem 2 AP **Homework #3-5:** Problems pg. 109-110 #3.79, 3.82, 3.83, 3.84, 3.88, 3.92, 3.94, 3.108

3.82 $N_2 + 3H_2 \rightarrow 2NH_3$

(a) **N_2 is the limiting reagent**.

(b) 9 molecules of H_2 will react with 3 molecules of N_2, leaving 1 molecule of H_2 in excess. The mole ratio between N_2 and NH_3 is 1:2. When 3 molecules of N_2 react, 6 molecules of NH_3 will be produced.

3.83 **NO** is the **limiting reagent**; it limits the amount of product produced. The amount of product produced is **0.886 mole NO_2**.

3.84 The initial amount of **O_3** limits the amount of product that can be formed; therefore, it is the **limiting reagent**.

? g NO_2 = 0.709 g NO_2

mol NO remaining = 0.0069 mol NO

3.92 ? **g C_6H_{14} = 3.47×10^3 g C_6H_{14}**

3.94 ? g S_2Cl_2 = **8.55 g S_2Cl_2**

% yield = **76.6%**

3.108 **percent yield = 89.6% = purity of Fe_2O_3**