**CW1: AP Stoichiometry Problems**

**Name:**

**Directions: Solve each problem completely, show your work and use significant figures and units in your answer.**

1. Hydrofluoric acid solution cannot be stored in glass bottles because compounds called silicates in the glass are attacked by the hydrofluoric acid. Sodium silicate (Na2SiO3), for example, reacts as follows:

**Na2SiO3 (s) + HF (aq) 🡪 H2SiF6 (aq) + NaF (aq) + H2O**

* 1. How many moles of hydrofluoric acid are needed to react with 0.300 mol of sodium silicate?
  2. How many grams of sodium fluoride form when 0.500 mol of hydrofluoric acid reacts with excess sodium silicate?
  3. How many grams of sodium silicate can react with 0.800g of hydrofluoric acid

1. Aluminum sulfide solid reacts with water for form aluminum hydroxide solid and a hydrosulfuric acid solution.
   1. Write a balanced chemical equation for this reaction.
   2. How many grams of aluminum hydroxide are obtained from 14.2g of aluminum sulfide?
   3. How many grams of water are needed to react with 14.2g of aluminum sulfide?
2. A piece of aluminum foil 1.00cm2 and 0.0550cm thick is allowed to react with bromine to form aluminum bromide.
   1. How many grams of aluminum is this? (d = m/V density of aluminum = 2.669g/cm3)
   2. What is the theoretical yield of aluminum bromide (in grams), assuming the aluminum reacts completely?
   3. How many grams of bromine is needed to completely react with that amount of aluminum?