Stoichiometry Worksheet
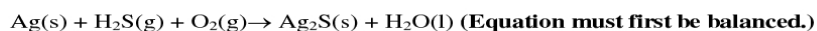
1. Silver sulfide (Ag_2S) is the common tarnish on silver objects. What weight of silver sulfide can be made from 1.23 mg of hydrogen sulfide (H_2S) obtained from a rotten egg? The reaction of formation of silver sulfide is given below:

   $Ag(s) + H_2S(g) + O_2(g) \rightarrow Ag_2S(s) + H_2O(l)$ **(Equation must first be balanced.)**

2. A somewhat antiquated method for preparing chlorine gas involves heating hydrochloric acid with pyrolusite (manganese dioxide), a common manganese ore. (Reaction given below.) How many kg of HCl react with 5.69 kg of manganese dioxide?

   $HCl(aq) + MnO_2(s) \rightarrow H_2O(l) + MnCl_2 (aq) + Cl_2(g)$ **(Equation must first be balanced.)**
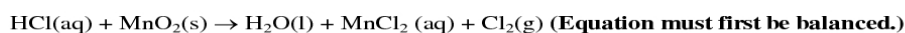
3. Given the following equation: $2 C_4H_{10} + 13 O_2 ---> 8 CO_2 + 10 H_2O$, show what the following molar ratios should be.

   a. C_4H_{10} / O_2 b. O_2 / CO_2 c. O_2 / H_2O
   d. C_4H_{10} / CO_2 e. C_4H_{10} / H_2O

4. Given the following equation: $2 KClO_3 ---> 2 KCl + 3 O_2$

   How many moles of O_2 can be produced by letting 12.00 moles of $KClO_3$ react?

5. Given the following equation: $2 K + Cl_2 ---> 2 KCl$

   How many grams of KCl is produced from 2.50 g of K and excess Cl_2. From 1.00 g of Cl_2 and excess K?

6. Given the following equation: $Na_2O + H_2O ---> 2 NaOH$

   How many grams of NaOH is produced from 1.20×10^2 grams of Na_2O? How many grams of Na_2O are required to produce 1.60×10^2 grams of NaOH?

7. Given the following equation: $8 Fe + S_8 ---> 8 FeS$

   What mass of iron is needed to react with 16.0 grams of sulfur? How many grams of FeS are produced?

8. Given the following equation: $2 NaClO_3 ---> 2 NaCl + 3 O_2$

   12.00 moles of $NaClO_3$ will produce how many grams of O_2? How many grams of NaCl are produced when 80.0 grams of O_2 are produced?