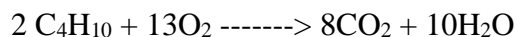# Worksheet 2 for Simple Stoichiometry

Solve the following stoichiometryproblems:

1) The combustion of a sample of butane, C_4H_{10} (lighter fluid), produced 2.46 grams of water.

$$2\ C_4H_{10} + 13\ O_2 \text{ -------> } 8\ CO_2 + 10\ H_2O$$
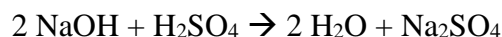
(a) How many moles of water formed?

(b) How many moles of butane burned?

(c) How many grams of butane burned?
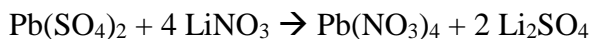
(d) How much oxygen was used up in moles?

(e) How much oxygen was used up in grams?
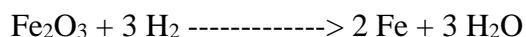
2) Using the following equation:

$$2\ NaOH + H_2SO_4 \rightarrow 2\ H_2O + Na_2SO_4$$

How many grams of sodium sulfate will be formed if you start with 200 grams of sodium hydroxide and you have an excess of sulfuric acid? **(ANSWER 355.3g Na₂SO₄)**

3) Using the following equation:

$$Pb(SO_4)_2 + 4\ LiNO_3 \rightarrow Pb(NO_3)_4 + 2\ Li_2SO_4$$

How many grams of lithium nitrate will be needed to make 250 grams of lithium sulfate, assuming that you have an adequate amount of lead (IV) sulfate to do the reaction?
(ANSWER 386.3g of LiNO₃)
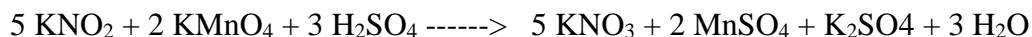
4) Using the following equation:

$$Fe_2O_3 + 3\ H_2 \text{-------------}> 2\ Fe + 3\ H_2O$$

Calculate how many grams of iron can be made from 16.5 grams of Fe_2O_3 by the following equation.
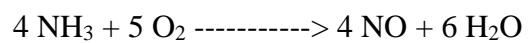
5) Using the following equation:

$$2\ I_2 \ + \ KIO_3 \ + \ 6HCl \text{ ---------}> \ 5ICl \ + \ KCl \ + \ 3H_2O$$
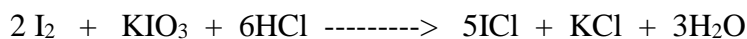
Calculate how many grams of iodine are needed to prepare 28.6 grams of ICl by this reaction.
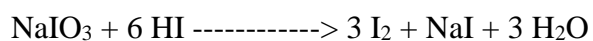
6) Using the following equation:

$$5\ KNO_2 + 2\ KMnO_4 + 3\ H_2SO_4 \text{ ------}> \ 5\ KNO_3 + 2\ MnSO_4 + K_2SO4 + 3\ H_2O$$

How many grams of $KMnO_4$ are needed to carry out this reaction on 11.4 grams of KNO_2?

7) Using the following equation:

$$4\ NH_3 + 5\ O_2 \text{-----------> } 4\ NO + 6\ H_2O$$

How many grams of oxygen (O_2) are needed to react with 56.8 grams of ammonia by this reaction?

8) Using the following equation:

$$NaIO_3 + 6\ HI \text{------------> } 3\ I_2 + NaI + 3\ H_2O$$

Calculate the number of grams of iodine (I_2) that can be made this way from 16.4 grams of $NaIO_3$.