Guided Notes: Stoichiometry

Name: _____

Review: Percent Composition

1. Determine the percent composition of oxygen in magnesium nitrate.

Stoichiometry:

- process that chemists use to determine the relationship between _____ _____
- Tells us:
  - _____
  - _____

Mole Ratios:

- The relationship between _____ of any 2 substances in a reaction.
  - ____H_2 + ____O_2 → ____H_2O
  - Possible mole ratios:

Stoichiometry Steps:

1. Complete and balance the chemical equation.
2. Put the quantity (with units) that you know above the element/compound in the chemical equation.
3. Put an x (with units) above the element/compound that you are looking for in the chemical equation.
4. If not already in moles, convert the known quantity to moles.
5. Determine the mole ratios and convert to the new element/compound.
6. If necessary, convert from moles back to grams (depending on what the problem is asking for).

Stoichiometry Practice:

1. Sodium chloride is decomposed into the elements sodium and chlorine. How many grams of chlorine gas can be obtained from 2.50 mole NaCl?

2. A solution of potassium chromate reacts with a solution of lead (II) nitrate to produce yellow precipitate of lead (II) chromate and a solution of potassium nitrate. Given 80.8 g $PbCrO_4$, how many moles of potassium chromate are used?

$K_2CrO_4 + Pb(NO_3)_2 \rightarrow PbCrO_4 + 2\ KNO_3$

3. Given the following equation for the combustion of ethanol, C_2H_5OH, how many moles of O_2 are needed to burn 52.3 g C_2H_5OH?

$C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$

4. Determine the mass of water produced if 65.2 g of calcium carbonate are allowed to react with excess phosphoric acid according to the following reaction:

$3\ CaCO_3 + 2\ H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 3H_2O + 3CO_2$

5. Potassium chlorate decomposes to potassium chloride and oxygen. How much (mass) oxygen is produced when 49.89 g potassium chlorate decomposes?

$2KClO_3 \rightarrow 2KCl + 3O_2$