**Unit 6 Notes**

**Stoichiometry and Mole Ratios**

Stoichiometry – The method of determining \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a reactant or product you have based on the amount of another reactant or product.

The amount of how much can have units of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Mole ratio – The ratio of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of one reactant/product to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of another reactant or product

The mole ratio is used to convert between moles of one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to

moles of another \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The numbers used in a mole ratio come from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a balanced chemical equation.

For the equation 2H2O2🡪2H2O + O2 the coefficients tell us the following:

1. For every \_\_\_ moles of H2O2 reacted \_\_\_ moles of H2O are produced. 2 mol H2O2=2 mol H2O

2. For every \_\_\_ moles of H2O2 reacted \_\_\_ mole of O2 is produced 2 mol H2O2=1 mol

O2

3. For every \_\_\_ moles of H2O produced \_\_\_ mole of O2 is produced. 2 mol H2O=1 mol O2

Examples:

Given the following balanced chemical equation 2H2O2🡪2H2O + O2

How many moles of H2O could be produced when 5 moles of H2O2 decomposes?

How many moles of O2 could be produced when 5 moles of H2O2 decomposes?

How many moles of H2O2will need to decompose to produce 10 moles of O2?

Balance the following equation and then answer the following questions:

\_\_ Na2SO4 + \_\_AlCl3 🡪 \_\_NaCl + \_\_Al2(SO4)3

How many moles of Al2(SO4)3 can be produced from 10 moles of AlCl3?

How many moles of Na2SO4 are needed to produce .02 moles of NaCl?

Magnesium metal reacts with hydrochloric acid (HCl) to form Magnesium Chloride and hydrogen gas. How many moles of Hydrogen gas can be produced when .034 moles of Magnesium are reacted with an excess amount of HCl.