STOICHIOMETRY: MOLE TO MOLE NOTES

**Vocabulary:**

*Stoichiometry***-** Greek, “stoiechion” (element) and “metron” (to measure). The calculation of the amount of substances in a chemical reaction from the balanced equation.

*Balance the equation and then label the reactants, products, and coefficients in the following chemical equation:*



*Conversion factor***-** a numeric ratio of equal measurements used to convert quantities between different units.

*Moles (mol)***-** the quantity of an element or compound containing 6.02 x 1023 (Avagadro’s number) particles (ex. atoms, ions, etc.) of that element/compound.

*Molar (Molecular) Mass***-** the weight (in grams) of a single mole of particles (atoms, ions, or molecules) of an element/compound.

# Steps:

1. Balance the equation
2. Determine the mole to mole ratio between A and B
3. Multiply across, Divide Bottom

General Form for mole to mole conversions:

| *# mol A* | *Ratio from coefficient mol B* | *= moles of B* |
| --- | --- | --- |
|  | *Ratio from coefficient mol A* |

**ketzbook’s Stoichiometry Tricks Video:**

Nitrogen reacts with Hydrogen to produce a component of fertilizer called ammonia (NH3). How many moles of Nitrogen (N2) do you need to make 10 moles of ammonia (NH3)?

1. Balance the equation:

*1*N2 + *3* H2 -> *2* NH3

1. Determine the mole-to-mole ratio: *1:3:2*
2. *10* moles NH3 require *1* mole N2
3. Using the given information to solve the problem:

|  *10 mol NH3* | *1 N2* | *= 5 mol N2*  |
| --- | --- | --- |
|  | *2 mol NH3* |