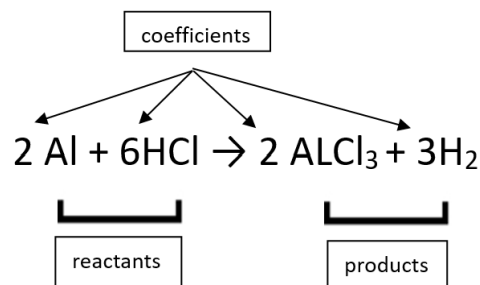


STOICHIOMETRY: MOLE TO MOLE NOTES

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 6.02×10^{23} (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:

$$\frac{\# \text{ mol A}}{\text{Ratio from coefficient mol A}} \times \frac{\text{Ratio from coefficient mol B}}{1} = \text{moles of B}$$

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:
 $1 \text{ N}_2 + 3 \text{ H}_2 \rightarrow 2 \text{ NH}_3$
2. Determine the mole-to-mole ratio: **1:3:2**
3. **10** moles NH₃ require **1** mole N₂
4. Using the given information to solve the problem:

<i>10 mol NH₃</i>	<i>1 N₂</i>	<i>= 5 mol N₂</i>
	<i>2 mol NH₃</i>	