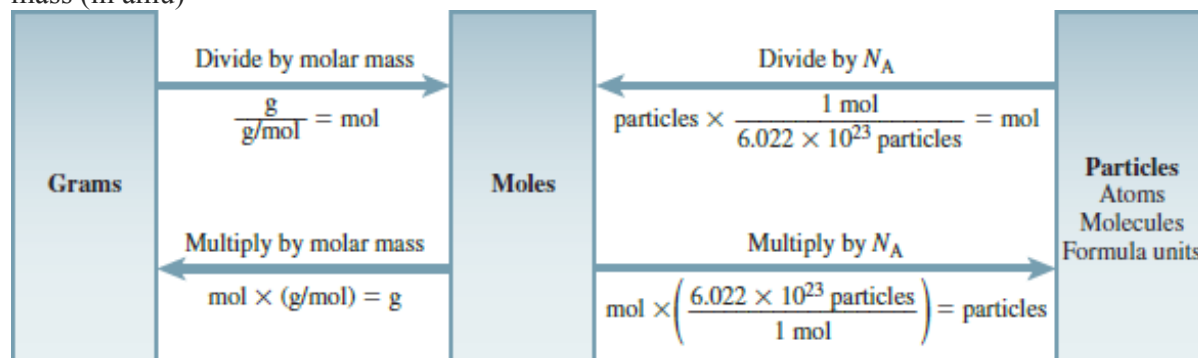


$$1 \text{ g} = 6.022 \times 10^{23} \text{ amu}$$

*The molar mass (in grams) of any compound is numerically equal to its molecular or formula mass (in amu)



3.5: Combustion Analysis

Combustion Analysis: an experimental determination of an empirical formula by a reaction with oxygen to produce $\text{CO}_2 + \text{H}_2\text{O}$

3.6: Calculations with Balanced Chemical Equations

*When reactants are combined in exactly the mole ratio specified by the balanced chemical equation, they are said to be combined in **stoichiometric amounts**.

$\hat{=}$ - means “is stoichiometrically equivalent to” or “equivalent to”

* =

Stoichiometric Amounts: quantities of reactants in the same relative amounts as those represented in the balanced equation

3.7: Limiting Reactants

Limiting Reactant: the reactant that is completely consumed and determines the amount of product formed

Excess Reactant: the reactant present in a greater amount than necessary to react with all the limiting reactant

Combination Reaction: a reaction in which two or more reactants combine to form a single product

Decomposition Reaction: a reaction in which one reactant forms two or more products

Combustion Reaction: a substance burns in the presence of oxygen

Theoretical Yield: the maximum amount of product that can be obtained from a reaction

Actual Yield: the amount of product actually obtained from a reaction

*Actual Yield is always less than the theoretical yield.

Percent Yield: the ratio of actual yield to theoretical yield multiplied by 100%

$$\% \text{ yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100\% \quad \text{Equation 3.2}$$