Amounts In Chemistry: The Mole & Molar Mass

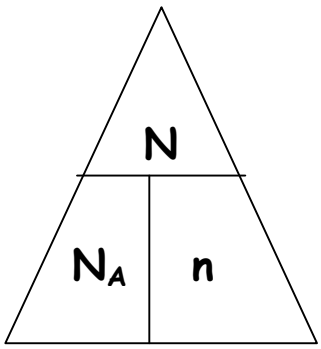
A. The Mole

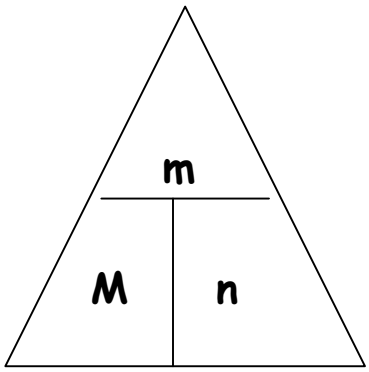
- Quantity that we use to measure chemical entities
- Symbol – n, unit – mol
- **Avogadro's Number** - used to determine the number of atoms or molecules from the number of moles
    - Symbol – N_A, unit – atoms or molecules
    - $N_A = 6.02 \times 10^{23}$

B. Molar Mass

- Symbol – M, unit – g/mol
- Atomic mass from the periodic table

C. IDIOT TRIANGLES





D. Examples:

1. Calculate the number of atoms of sodium in a 3.75 mol sample.

G: $n = 3.75$ mol
$N_A = 6.02 \times 10^{23}$

R: $N = ?$ atoms

A: $N = N_A \times n$

S: $N = 3.75 \text{ mol} \times 6.02 \times 10^{23}$ atoms/mol
$= 2.26 \times 10^{24}$ atoms

P: The number of sodium atoms is 2.26×10^{24}

2. Calculate the mass of 0.330 mol of magnesium.

G: $n = 0.330$ mol
$M = 24.3$ g/mol

R: $m = ?$ g

A: $m = n \times M$

S: $m = 0.330 \text{ mol} \times 24.3$ g/mol
$= 8.02$g

P: The mass of the magnesium is 8.02g