Notes: Avogadro's Number

Representative Particle: The smallest part of a substance that retains the properties of the substance.

For a **molecular compound** (H_2O), a representative particle is a **molecule**.

For an **ionic compound** (Na_2SO_4), a representative particle is a **formula unit**.

For an **atomic substance** (He, Fe), a representative particle is an **atom**.

There are 6.02×10^{23} representative particles in a mole of a substance.

Examples:

1. How many molecules are in 4.32 moles of CO_2?

$$\frac{\textbf{4.32 mole}}{\textbf{1}} \times \frac{\textbf{6.02x10}^{\textbf{23}}\textbf{mlc}}{\textbf{1 mole}} = \textbf{2.60 x 10}^{\textbf{24}}\textbf{ mlc}$$

2. How many atoms of oxygen are in 22.1 g of CO_2

$$\frac{\textbf{22.1 g } CO_2}{\textbf{1}} \times \frac{\textbf{1 mole}}{\textbf{44.0 g}} \times \frac{\textbf{6.02x10}^{\textbf{23}}\textbf{mlc}}{\textbf{1 mole}} \times \frac{\textbf{2 atoms O}}{\textbf{1 mlc } CO_2} =$$

6.05×10^{23} atoms of oxygen.