Mole Concept:

One mole of any substance contains a fixed number (6.022×10^{23}) of any type of particles (atoms or molecules or ions) and has a mass equal to the atomic or molecular weight, in grams. Thus it is correct to refer to a mole of helium, a mole of electrons, or a mole of Na_+, meaning respectively Avogadro's number of atoms, electrons or ions.

∴ Number of moles = Weight (grams)Weight of one mole (g/mole)

=WeightAtomic or molecular weight

What is Mole?

Atoms and molecules are too small to count. To solve this problem their numbers are expressed in terms of Avogadro's number ($N_A = 6.023 \ 10^{23}$). Mole is the number equal to Avogadro's number just like a dozen is equal to 12, a century means 100, a score means = 20.

Mole can be defined as a unit which represents 6.023×10^{23} particles of same matter.

A mole (symbol mol) is defined as the amount of substance that contains as many atoms, molecules, ions, electrons or any other elementary entities as there are carbon atoms in exactly 12 gm of. The number of atoms in 12 gm of is called Avogadro's number.

One atomic mass unit (amu)
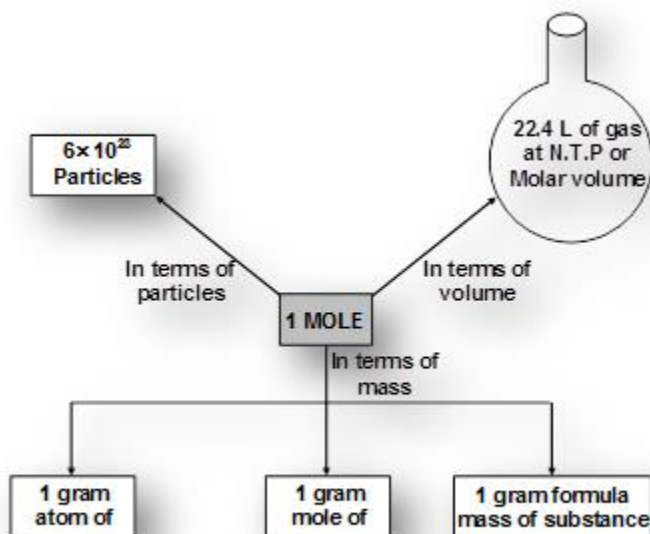
The number of moles of a substance can be calculated by various means depending on data available, as follows.

- Number of moles of molecules

- Number of moles of atoms

- Number of moles of gases (Standard molar volume at STP = 22.4 lit)

- Number of moles of particles e.g. atoms, molecules ions etc

- For a compound, y moles of A = x moles of B
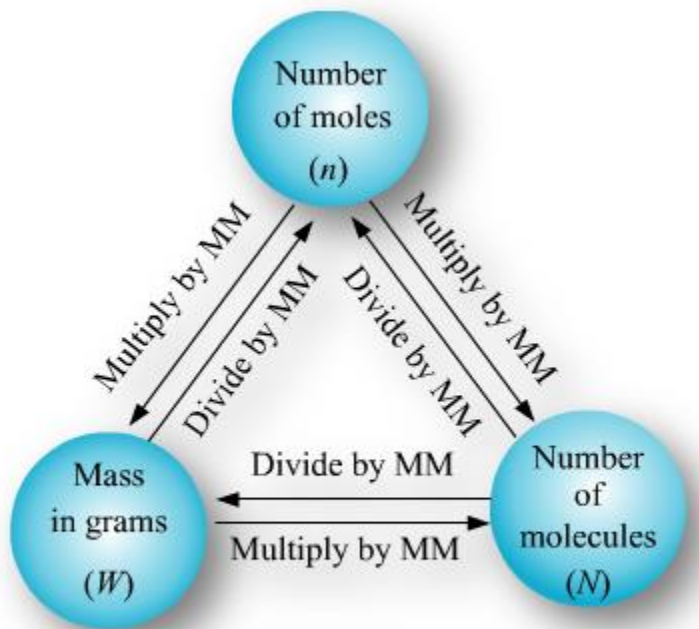
MM: Molecular mass

- Mole fraction = fraction of the substance in the mixture expressed in terms of mol is called its mol fraction (X)

    E.g. for a mixture of substance A & B

(n terms of denote number of moles)