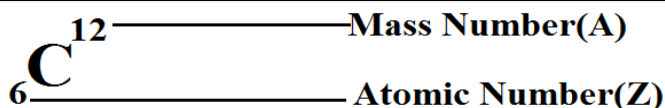


## Points to Remember

<b>Atom</b>	Atom is the <i>smallest particle that takes part in a chemical reaction</i> . It contains subatomic particles - protons, neutrons and electrons. <b>Isotopes</b> : Atoms of same elements having different atomic masses. <i>Ex:</i> $_{17}\text{Cl}^{35}$ , $_{17}\text{Cl}^{37}$ <b>Isobar</b> : Atoms of different elements having same atomic masses. <i>Ex:</i> $_{18}\text{Ar}^{40}$ , $_{20}\text{Ca}^{40}$ <b>Isotones</b> : Atoms of different elements having same number of neutrons. <i>Ex:</i> $_{6}\text{C}^{13}$ , $_{7}\text{N}^{14}$
<b>Molecules</b>	A molecule is a combination of two or more atoms held together by strong chemical forces of attraction. * <b>Homoatomic molecule</b> : It is made of similar kind of atoms. <i>Ex</i> : $\text{O}_2$ * <b>Heteroatomic molecule</b> : It consist of atoms of different elements. <i>Ex</i> : $\text{HCl}$ * <b>Polyatomic molecule</b> : It contains more than three atoms. <i>Ex</i> : $\text{CH}_4$
<b>Atomic Mass Unit (AMU)</b>	<b>Average atomic mass (AAM)</b>
The mass of an atom is measured in <b>atomic mass unit</b> (amu). It is $\frac{1}{12}$ <sup>th</sup> of the mass of a Carbon 12 atom.	It is weighted average of the masses of its naturally occurring isotopes.
<b>Gram Atomic Mass (GAM)</b>	<b>Gram Molecular Mass (GMM)</b>
Atomic mass of an element is expressed in grams, it is called gram atomic mass.	If the molecular mass of a compound is expressed in grams, it is called gram molecular mass.
<b>Relative Atomic Mass (RAM)</b>	<b>Relative Molecular Mass (RMM)</b>
It is the ratio between the average mass of its isotopes to $\frac{1}{12}$ <sup>th</sup> of the mass of a Carbon 12 atom. It is also called as standard atomic weight.	It is the ratio between the mass of one molecule of the substance to $\frac{1}{12}$ <sup>th</sup> of the mass of a Carbon 12 atom.
<b>Avogadro's law (or) hypothesis</b>	The Avogadro's law states that "equal volumes of all gases under similar conditions of temperature and pressure contain equal number of molecules".

- ★ Number of moles =  $\frac{\text{Mass}}{\text{Atomic/molecular mass}}$  (OR)  $\frac{\text{No. of atoms/molecules}}{\text{Avogadro's number}(N_A)}$
- ★ No. of atoms/molecules = No. of moles  $\times N_A$  (OR)  $\frac{\text{Mass}}{\text{Atomic/molecular mass}} \times N_A$
- ★ Percentage composition =  $\frac{\text{mass of required element}}{\text{molecular mass of the compound}} \times 100$
- ★ STP - Standard Temperature and Pressure is 273.15 K, 1.00 atm
- ★ Molecular mass = 2  $\times$  Vapour density      ★ Avogadro's number ( $N_A$ ) =  $6.023 \times 10^{23}$
- ★ Atomicity =  $\frac{\text{Molecular mass}}{\text{Atomic mass}}$       ★ Molar volume = 22.4 litres (or) 22400 ml

### Mass No. & Atomic No.



*Mass number = No. of protons + No. of neutrons*

*Atomic number = No. of protons*

### Atomic Masses of commonly used elements

Hydrogen (H)	1	Carbon (C)	12
Nitrogen (N)	14	Oxygen (O)	16
Sodium (Na)	23	Magnesium (Mg)	24
Sulphur (S)	32	Chlorine (Cl)	35.5
Calcium (Ca)	40	Phosphorus (P)	31
Aluminium (Al)	27	Helium (He)	4