

CHEMICAL FORMULA SHEET CLASS 9TH

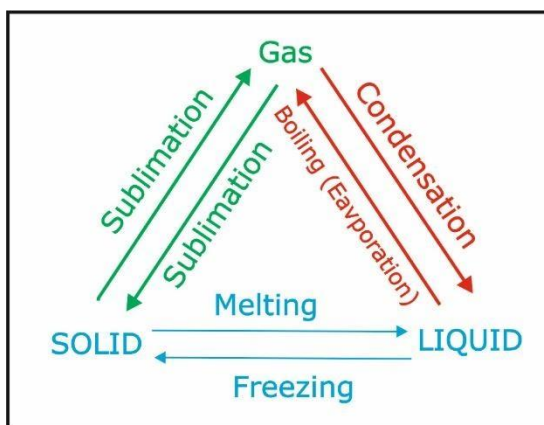
- While attempting a numerical what would you require-
 1. Subject Knowledge
 2. Clarity of concept
 3. To have the formulas at the tips of your fingers
- To have all the formula at our tips not only helps to solve the question but also helps to solve it quicker.

MATTER IN OUR SURROUNDING

- To convert the temperature from Kelvin and Celsius or Celsius to Kelvin

$$K = ^\circ C + 273$$

$$^\circ C = K - 273$$



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ATOMS AND MOLECULES

- $1\text{nm} = 10^{-9}\text{m}$
 $10^9 = 1\text{ m}$
- Atomic number and atomic mass of first 20 element with their symbol

NAME AND SYMBOL	ATOMIC NUMBER	ATOMIC MASS (amu)



H	1	1.00
He	2	4.00
Li	3	6.94
Be	4	9.01
B	5	10.81
C	6	12.01
N	7	14.00
O	8	15.99
F	9	18.99
Ne	10	20.18
Na	11	22.99
Mg	12	24.30
Al	13	26.98
Si	14	28.08
P	15	30.97
S	16	32.06
Cl	17	35.45
Ar	18	39.94
K	19	39.09
Ca	20	40.07

➤ 1 mole = 6.023×10^{23} atoms/ molecule / ions or 1 mole of anything = Avogadro's number (N_0)

➤ No. of Moles = $\frac{\text{Mass of element}}{\text{Molar mass}}$ (Given mass / Molar mass)

➤ No. of Moles = $\frac{\text{Given number of atoms}}{\text{Avogadro number}} = \frac{\text{Given number of molecules}}{\text{Avogadro number}}$

$$n = \frac{N}{N_0}$$

No. of moles = n

Given mass = m (could be of for atom / molecule/ ion)

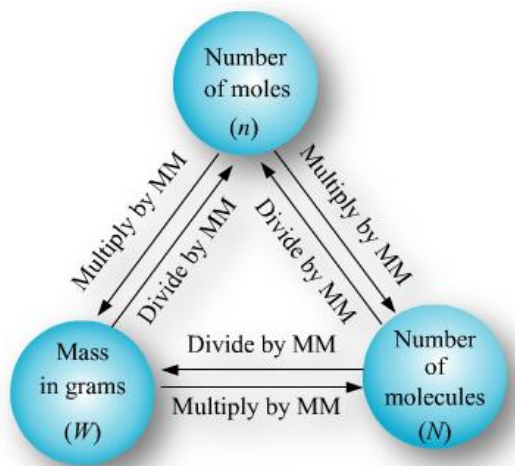
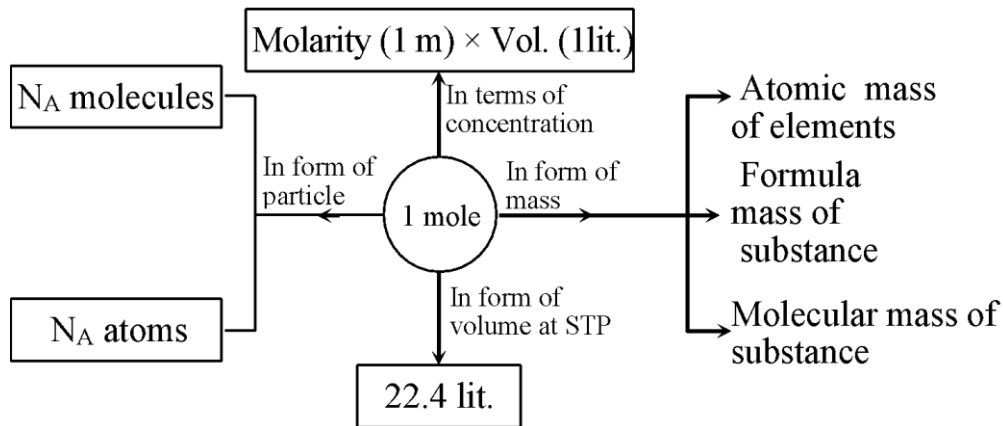
Molar mass = M (could be of for atom / molecule/ ion)

Given number of particles = N

Avogadro number of particles = N_0

These relations can be interchanged as

Mass of element, $m = n \times M$ or No. of particles of element, $N = n \times N_0$



MM: Molecular mass

➤ Vapour Density (V.D) =
$$\frac{\text{Mass of 'x' volume of a gas}}{\text{Mass of equal volume of hydrogen}}$$

STRUCTURE OF ATOM

- charge present on an electron = $-1.6 \times 10^{-19} \text{ C}$
- charge present on a proton = $+1.6 \times 10^{-19} \text{ C}$
- There is no charge present on a neutron.
- Number of electrons = Number of protons (in any atom)
- Atomic number = Number. of protons present in that atoms
- Mass number or Atomic mass number = Number of Protons+ Number of Neutrons
- The maximum number of electrons in different shells is $2n^2$

The first orbit or K shell will have $2 \times 1 = 2$ electrons.

The second shell L will have $2 \times 2 = 8$ electrons.

The third shell M will have $2 \times 3 = 18$ electrons.

The fourth shell N will have $2 \times 4 = 32$ electrons and so on.

➤ Average atomic mass =
$$\frac{M_1P_1 + M_2P_2 + \dots + M_NP_N}{100}$$

where M_1, \dots, M_N are the individual atomic mass of the isotopes of the element

P_1, \dots, P_N is their respective natural abundance.
