

In general $\frac{PV}{T} = K$ — (7)

$K \propto N$

N = Total number of molecules of gas in the vessel

$K = k_B N$ — (8) k_B = Boltzmann constant

by eq (7) & (8) $\frac{PV}{T} = k_B N$ — (9)

✓✓ **AVOGADRO'S LAW:**

Under the same conditions of temperature and pressure, equal volumes of different gases contain an equal number of molecules.

O_2

N_2

At NTP, in 22.4 Lt of any gas the no. of molecules is 6.023×10^{23} .

→ Avogadro's number $N_A = 6.023 \times 10^{23}$

Mass of 22.4 Lt of a gas at NTP is equal to its molar mass (M)