CONCEPT MAP

GRAPHICAL REPRESENTATION OF GASEOUS LAWS

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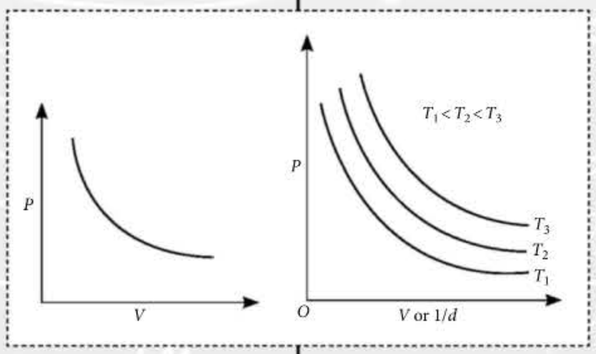
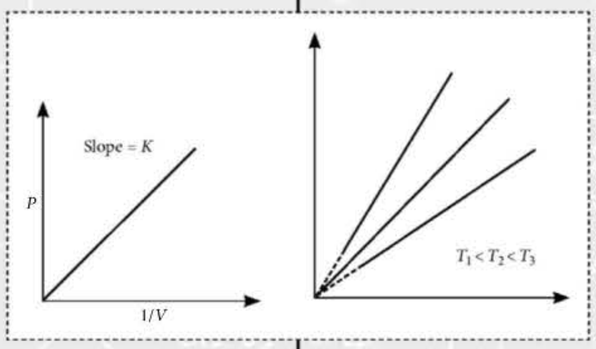
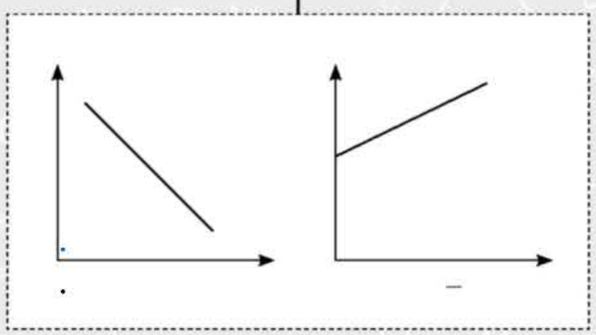




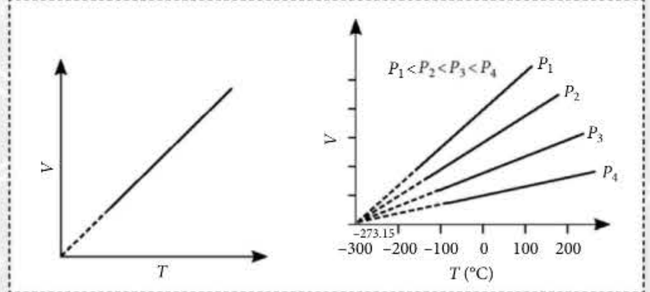


Charles' Law

$V \propto T, \frac{V}{T}$ = constant (at constant pressure) $V_t = V_0\left(\frac{273+t}{273}\right)$

$V_1/T_1 = V_2/T_2$

Isobars

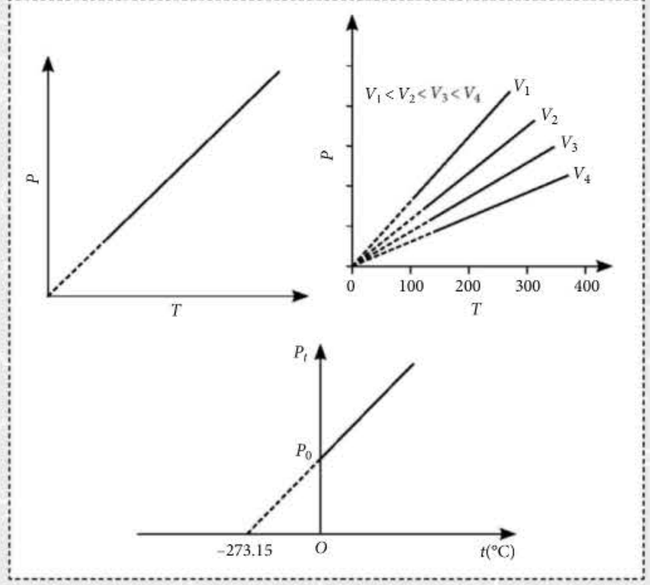


Gay-Lussac's Law / Amonton's Law

$P \propto T$, P/T = constant (at constant volume)

$\frac{P_1}{T_1} = \frac{P_2}{T_2}$; $P_t = P_0\left(1+\frac{t}{273}\right)$

Isochores

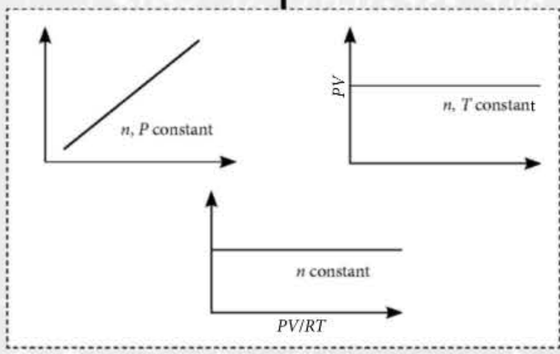


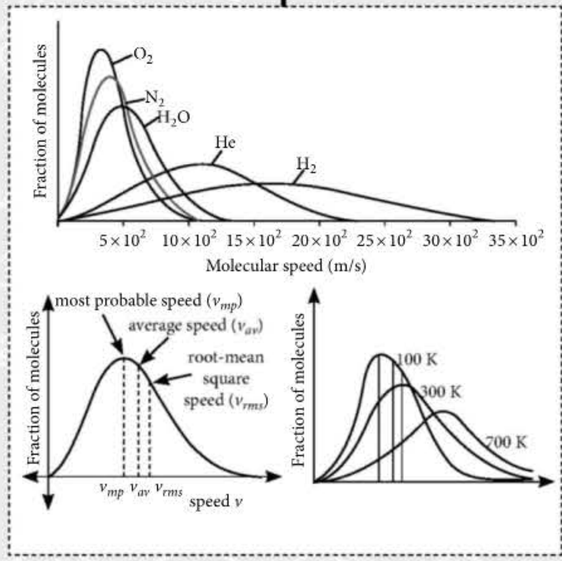
Ideal Gas Equation or Equation of State

$PV = nRT$ or $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$

$P = d\frac{RT}{M}$ (in terms of density)

$Z = \frac{PV}{RT}$ (Z is compressibility factor)





Graham's Law of Diffusion or Effusion

$\frac{r_1}{r_2} = \sqrt{\frac{T_1d_2}{T_2d_1}} = \sqrt{\frac{T_1M_2}{T_2M_1}}$

(diffusion at same pressure but different temperature)

$\frac{r_1}{r_2} = \frac{v_1}{v_2} = \sqrt{\frac{d_2}{d_1}} = \sqrt{\frac{M_2}{M_1}}$

(volume of two gases diffused at same time, at same T and P)

$\frac{r_1}{r_2} = \frac{t_2}{t_1} = \sqrt{\frac{d_2}{d_1}} = \sqrt{\frac{M_2}{M_1}}$

(time taken for diffusion of same volume of two gases at same T and P)