

KEY EQUATIONS

Boyle's -

$$P_1 V_1 = P_2 V_2$$

Charles

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

Gay-Lussac's

$$\frac{P_1}{T_1} = \frac{P_2}{T_2}$$

Combined

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

Ideal

$$PV = nRT$$

$n = \# \text{ moles}$

$$R = 8.31 \text{ L} \cdot \text{kPa} / \text{K} \cdot \text{mol}$$

or

$$0.0821 \text{ L} \cdot \text{atm} / \text{mol} \cdot \text{K}$$

Dalton's -

$$P_{\text{total}} = P_1 + P_2 + P_3 \dots$$

Graham's -

the lighter the gas, the greater the rate of effusion

$$\begin{aligned} 14.7 \text{ psi} &= \\ 101.3 \text{ kPa} &= \\ 1 \text{ atm} &= 760 \text{ mmHg} = \\ &760 \text{ torr} \end{aligned}$$