

Gas Laws Test

What to know (equation-wise) + what I will give you.

I will give you:

$$1 \text{ atm} = 101.3 \text{ kPa} = 760.0 \text{ mmHg}$$

$$\frac{\text{Gas A}}{\text{Gas B}} = \sqrt{\frac{M_B}{M_A}} \quad R = 8.31 \frac{\text{L kPa}}{\text{K mol}}$$

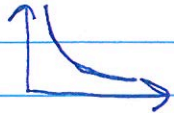
$$P_T = P_1 + P_2 + P_3 + \dots$$


You need to know:

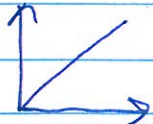
- Remember $\text{Br}_2, \text{I}_2, \text{N}_2, \text{Cl}_2, \text{H}_2, \text{O}_2, \text{F}_2$
- STP = standard temp (0°C) + standard pressure (1 atm)
- $^\circ\text{C} + 273 = \text{K}$

- Ideal Gas Law $PV = nRT$

- Combined Gas Law $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$ or $\frac{PV}{T} = k$ or $PV = kT$

- Boyle's Law: $P_1 V_1 = P_2 V_2$ or $PV = k$ Graph  Inverse relationship

- Charles' Law: $\frac{V_1}{T_1} = \frac{V_2}{T_2}$ or $\frac{V}{T} = k$ or $V = kT$  Direct

- Gay-Lussac's Law: $\frac{P_1}{T_1} = \frac{P_2}{T_2}$ or $\frac{P}{T} = k$ or $P = kT$  Direct

$n = \text{moles}$ not mass. $m = \text{mass}$

If given mass, convert to moles, then use $PV = nRT$.
(think molar mass)