

$$1 \text{ atm} = 760 \text{ mmHg} =$$

$$760 \text{ torr} = 101,325 \text{ Pa} =$$

$$14.7 \text{ psi}$$

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

Same units
 Same units
 L, cm³,
 mL

temp Kelvin

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

absolute zero - 0K

No movement of
the molecules

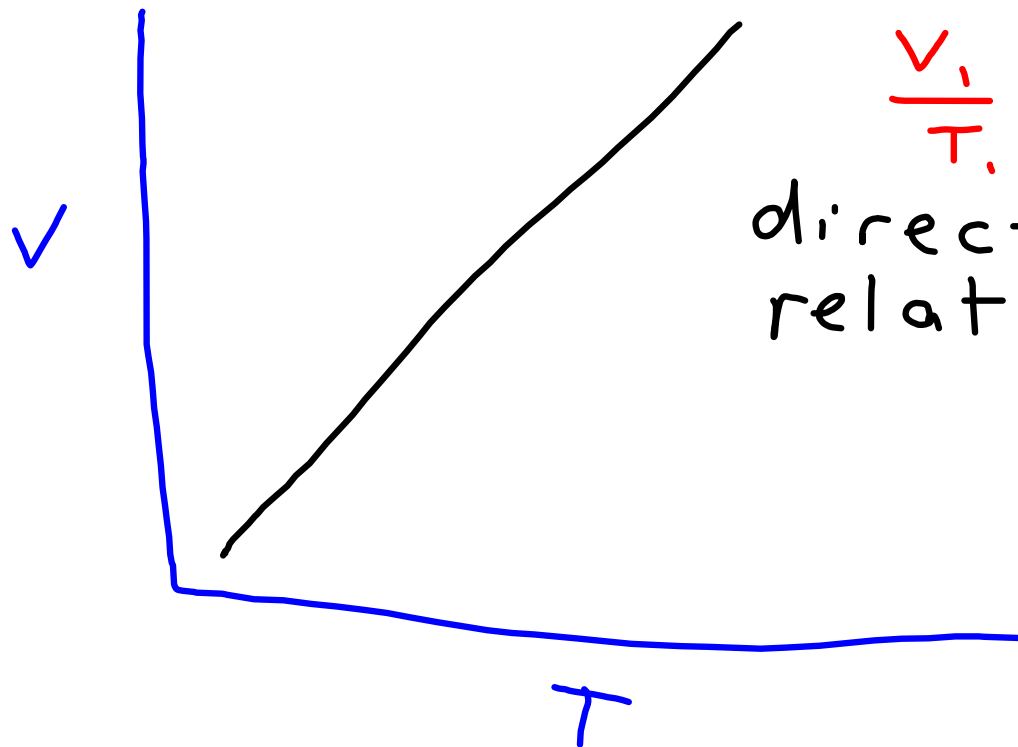
Succeeded to 5K

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

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

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

direct
relationship

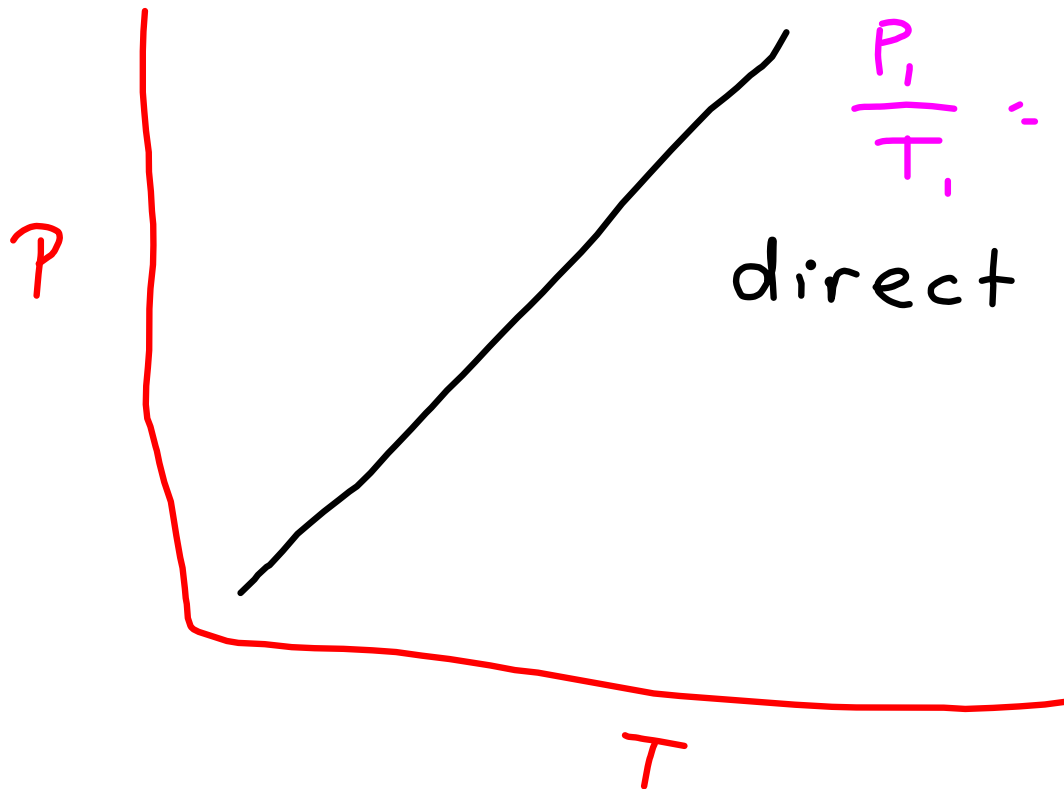


$$\frac{P_1 \cancel{V}_1}{T_1} = \frac{P_2 \cancel{V}_2}{T_2}$$

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

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

direct relationship -
ship

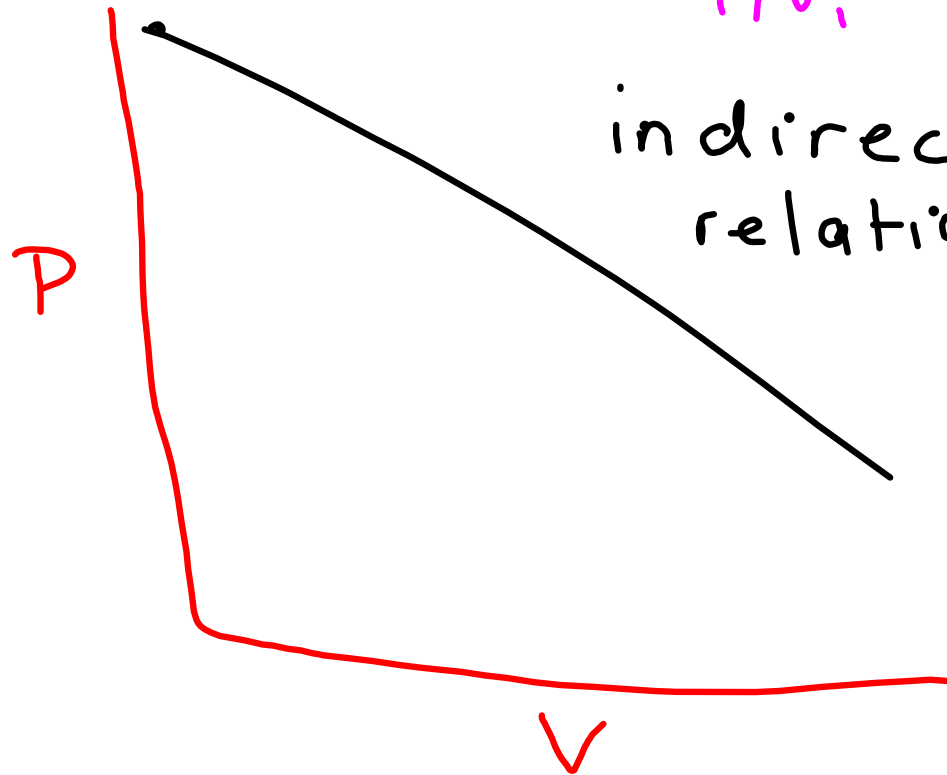


$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$P_1 V_1 = P_2 V_2 \quad \begin{matrix} \uparrow & \downarrow \\ & \end{matrix}$$

$$P_1 V_1 = P_2 V_2 \quad \begin{matrix} \downarrow & \uparrow \\ & \end{matrix}$$

indirect
relationship



$$6. \quad \frac{P_1 V_1}{\cancel{T_1}} = \frac{P_2 V_2}{\cancel{T_2}}$$

$$(0.943)(532) = x(876)$$

$$\frac{501.676}{876} = \frac{x(876)}{876}$$

$$.57268949 \text{ atm} = x$$

$$.573 \text{ atm} = x$$

$$8. \quad \frac{\cancel{P_1} V_1}{T_1} = \frac{\cancel{P_2} V_2}{T_2}$$

$$273 + 34.2 = 307.2 \text{ K}$$

$$\frac{4.4}{307.2} = \frac{5.1}{x}$$

$$4.4(x) = 307.2(5.1)$$

$$\frac{4.4(x)}{4.4} = \frac{1566.72}{4.4}$$

$$x = 356.0727273 \text{ K}$$

$$356.0727 - 273 = 83.0727^\circ\text{C}$$

$$83^\circ\text{C}$$

$$10. \quad \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$T_1 = 45.6 + 273 = 318.6 \text{ K}$$

$$T_2 = 55.8 + 273 = 328.8 \text{ K}$$

P_1 678 torr

$V_1 = 37 \text{ L}$

$P_2 \times$

$$V_2 = 40.0 \text{ L}$$

$$\frac{(678)(37)}{318.6} = \frac{(40.0)}{328.8}$$

$$78.738229 = x(.121654)$$

$x = 647.230909 \text{ torr}$

$$x = 650 \text{ torr}$$

$$4. \quad \frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$P_1 = 1.3 \text{ atm}$$

$$V_1 = 330 \text{ mL}$$

$$T_1 = 25.6^\circ\text{C} + 273 = 298.6 \text{ K}$$

$$P_2 = 2.5 \text{ atm}$$

$$V_2 = 250 \text{ mL}$$

$$T_2 = x$$

$$\frac{(1.3)(330)}{298.6} = \frac{(2.5)(250)}{x}$$

$$\frac{1.4367046}{1} = \frac{625}{x}$$

$$\frac{1.4367046(x)}{1.4367046} = \frac{625}{1.4367046}$$

$$x = 435.0233 \text{ K}$$

$$435.0233 - 273 = 162.0233^\circ\text{C}$$

$$160^\circ\text{C}$$

$$\begin{array}{c}
 \text{volume (L)} \swarrow \\
 PV = nRT \quad \nwarrow \text{temp (K)} \\
 \nearrow \text{press (atm)} \quad \nwarrow \text{mol} \quad \nearrow \text{constant} \\
 \text{constant} \\
 .0821 \quad \left(\frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}} \right)
 \end{array}$$

$$\frac{(\text{atm})(\text{L})}{\text{atm L}} = \frac{\text{mol} \left(\frac{\text{atm} \cdot \text{L}}{\text{mol} \cdot \text{K}} \right) (\text{K})}{(\text{atm})(\text{L})}$$

$$a_{tm}(L) = a_{tm}(L)$$

1. $PV = nRT$

$$\frac{5324 \text{ mmHg} \times 1 \text{ atm}}{760 \text{ mmHg}} = 7.0052 \text{ atm}$$

$$23.3^{\circ}\text{C} + 273 = 296.3 \text{ K}$$

$$(7.0052)(4.00) = x (.0821)(296.3)$$

$$\frac{28.0208}{24.32623} = x \frac{(24.32623)}{24.32623}$$

$$x = 1.15 \text{ mol}$$

2. $PV = nRT$

$$\frac{450 \text{ mmHg} \times 1 \text{ atm}}{760 \text{ mmHg}} = 0.592105 \text{ atm}$$

$$(0.592105)(12.22) = (2.5)(.0821)(x)$$

$$\frac{7.2355231}{.20525} = \frac{.20525(x)}{.20525}$$

$$x = 35.25224 \text{ K}$$

$$x = -237^{\circ}\text{C}$$

$$x = -240^{\circ}\text{C}$$

Wed Q
Balancing
① Polyatomic
② Odd-even
③ Hydrocarbon

$$5. \quad PV = nRT$$

$$375^{\circ}\text{C} + 273 = 648\text{K}$$

$$\frac{225\text{ mmHg} \times 1\text{ atm}}{760\text{ mmHg}} = .29605_{\text{atm}}$$

$$(.29605)(x) = (0.700)(0.0821)(648)$$

$$\frac{(.29605)(x)}{.29605} = \frac{37.24056}{.29605}$$

$$x = 125.7914541\text{ L}$$

$$x = 126\text{ L}$$

$$7. \quad PV = nRT$$

$$\frac{2450\text{mL} \times 1\text{L}}{1000\text{mL}} = 2.45\text{L}$$

$$-13.6^{\circ}\text{C} + 273 = 259.4\text{K}$$

$$x(2.45) = (0.45)(0.0821)(259.4)$$

$$\frac{x(2.45)}{2.45} = \frac{9.583533}{2.45}$$

$$x = 3.91164\text{ atm}$$

$$x = 3.9\text{ atm}$$

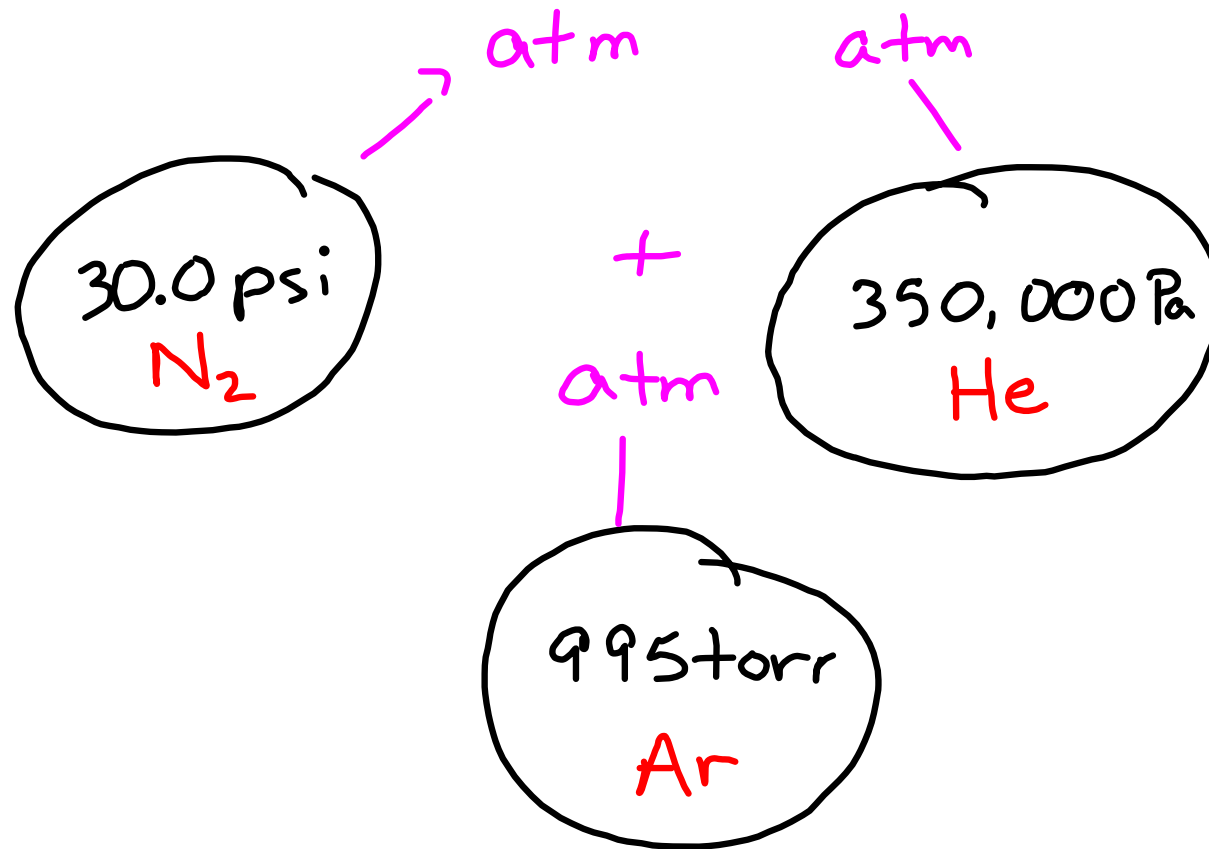
$$3.95$$

$$4.0$$

$$39.5$$

$$40.$$

$$4.0 \times 10^1$$



$$\frac{30.0 \text{ psi} \times 1 \text{ atm}}{14.7 \text{ psi}} = 2.0408 \text{ atm}$$

$$\frac{350,000 \text{ Pa} \times 1 \text{ atm}}{101,325 \text{ Pa}} = 3.4542 \text{ atm}$$

$$\frac{995 \text{ torr} \times 1 \text{ atm}}{760 \text{ torr}} = \frac{1.3092 \text{ atm}}{6.804 \text{ atm}}$$

6.8 atm