

chapter 5

pressure \approx atm

1 atm = 760 torr

1 atm = 760 mmHg

1 atm = 101.32 kPa

1 atm = 1.01325×10^5 Pa

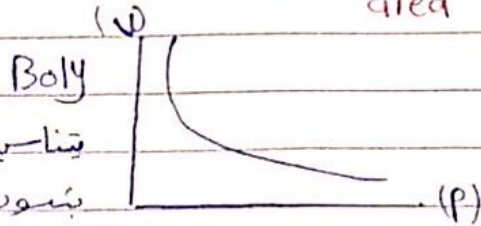
1 torr = 1 mmHg

Volume: حجم mL/L

Temperature: (C) $K = 273 + C$

STP = standard Temperature and Pressure

$P = \frac{\text{force}}{\text{area}}$



Boyle
تناسب العكسي بين الضغط و الحجم
شروط (n)(T)

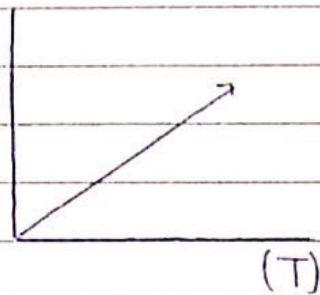
$P_1 V_1 = P_2 V_2$

Charles

(V) تناسب حجم الغاز طردياً مع درجة الحرارة

شروط (n)(P)

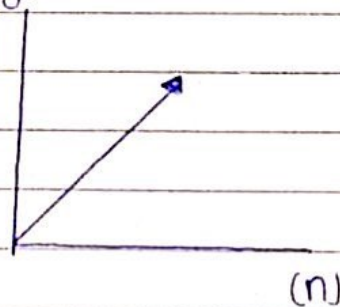
$\frac{V_1}{T_1} = \frac{V_2}{T_2}$



Avogadro

(V) تناسب حجم الغاز طردياً مع عدد المولات

$\frac{V_1}{n_1} = \frac{V_2}{n_2}$



$\left[\frac{P_1 V_1}{T_1 n_1} = \frac{P_2 V_2}{T_2 n_2} \right]$

القانون العام

- ① T ② P ③ V ④ n

Shahed Marabha
Five Apple

* Manometer = جهاز حساب الضغط
 * barometer = جهاز حساب درجة الحرارة

$$PV = nRT$$

P = Pressure

V = Volume

n = Mole = $\frac{\text{mass}}{\text{molar mass}}$ / number of mole = $\frac{\text{number of atom}}{\text{avogadro}}$

T = Temperature (K) = $C^{\circ} + 273$

R = 0.0821

→ STP

STP → standard Temperature and pressure. (معلومات ثابتة عند وجودها بالسؤال)

P = 1 atm

T = $0C^{\circ} = 273K$

R = 0.0821

V = (L)

ثوابت عند مرور
 بالسؤال STP

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

Molar Mass of a Gas *

m = mass

R = 0.0821

T = Temperature

P = pressure

V = Volum.

$$MW = \frac{mRT}{PV} = \frac{dRT}{P}$$

$$\text{Density} = \frac{m}{V} = d$$

Shahed Marabha

مساواة

$$(*) PV = nRT \Rightarrow PV = (\text{mass/molar mass}) RT$$

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

$$(*) V_1 P_1 = V_2 P_2$$

$$(*) \frac{V_1}{n_1} = \frac{V_2}{n_2}$$

$$(*) \frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$(*) \text{molar mass } MM = \frac{mRT}{VP} = \frac{dRT}{P}$$

$$(*) \text{density} = \frac{\text{mass}}{\text{volum.}} = \frac{m}{V} = \frac{\text{molar mass} \times P}{RT}$$

$$(*) \text{Mole} = \frac{\text{mass}}{\text{molar mass}}$$

Shakeel S