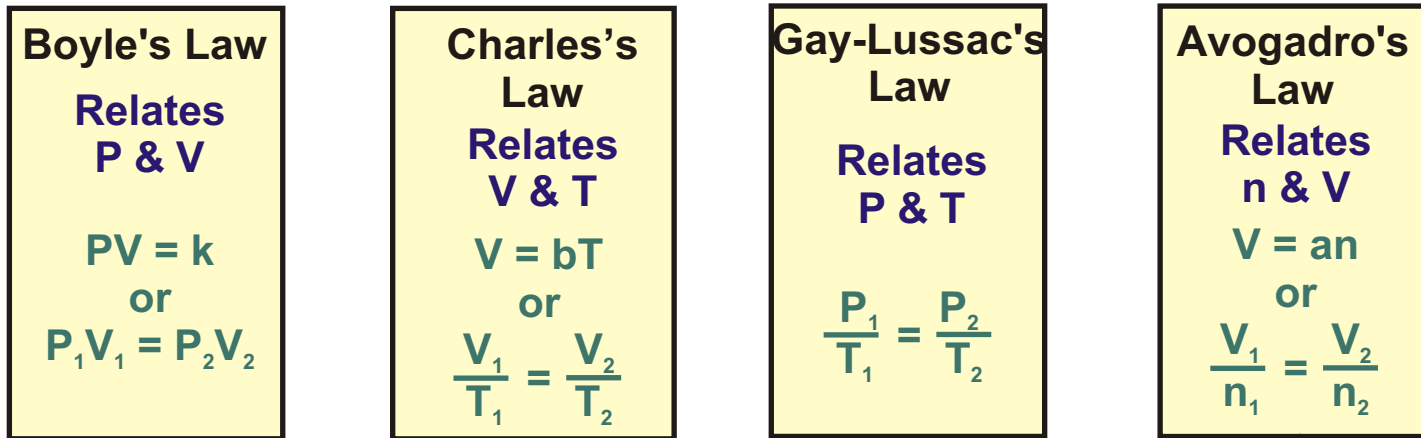


# GAS LAWS

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## Variables:

P = Pressure

V = Volume

T = Temperature (must use K!!!)

n = # of molecules

R = 0.08206 L atm/ K mol

or R = 8.314 L kPa/ K mol

**Put it All Together**  
**Combined Gas Law**  
 $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$   
and  
**The Ideal Gas Law**  
 $PV = nRT$

## STP

Standard Temp = 0°C or 273.15K

Standard Pressure = 1 atm

## Some conversions that 1 atm is equal to:

760.0 mm Hg = 760.0 torr = 14.69 psi =

101,325 Pa = 101.325 kPa

## Molar Volume of a Gas

at STP 22.4 L/mol

## Temperature Conversion

K = C + 273.15

**Dalton's Law of Partial Pressures**  
**Total pressure is the sum of all partial pressures**  
 $P_{\text{total}} = P_1 + P_2 + P_3 + \text{etc...}$   
Or  $P_{\text{dry gas}} = P_{\text{total}} - P_{\text{H}_2\text{O}}$   
 $\frac{\text{Moles gas}_x}{\text{Moles gas}_{\text{total}}} = \frac{P_x}{P_{\text{total}}}$