N27 – Gas Density and More

  

N26 – Ideal Gases and Laws

**Ideal Gas Law**

$$PV = nRT$$

**Molar Mass Kitty**

$$M= \frac{DRT}{P}$$

**Boyle’s Law**

$$P\_{1}V\_{1}=P\_{2}V\_{2}$$



**Charles’s Law**

$$\frac{V\_{1}}{T\_{1}}=\frac{V\_{2}}{T\_{2}}$$



**Gay-Lussac’s Law**

$$\frac{P}{T\_{1}}=\frac{P\_{2}}{T\_{2}}$$



**Avogadro’s Law**

$$\frac{V\_{1}}{n\_{1}}=\frac{V\_{2}}{n\_{2}}$$



**Dalton’s Partial Pressure**

$$P\_{total}=P\_{1}+P\_{2}+…$$

**Mole Fraction**

$X\_{a}= \frac{n\_{a}}{n\_{total}}$ $P\_{a}= X\_{a}P\_{total}$

N25 – Gases Review

**KMT = Kinetic Molecular Theory**

1. Gases consist of large numbers of tiny particles that are far apart relative to their size
– the volume of each gas molecule is considered negligible, they are treated as point particles.
2. Gas particles undergo elastic collisions
– meaning they do not lose energy when colliding.
3. Gas particles are in a constant, rapid, straight line, “chaotic” motion
– they possess kinetic energy (motion energy).
4. Gases are “Ideal Gases” – meaning they do not interact with each other.
– There are no forces of attraction or repulsion between particles.
5. The average kinetic energy of the particles is proportional to temperature
– (in Kelvin!!!) – T ↑, KE ↑
* There is a distribution of speeds, some go faster than others
so overall there is an average kinetic energy of the sample.