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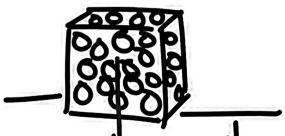
Three States of Matter

Measure Mass

Solid

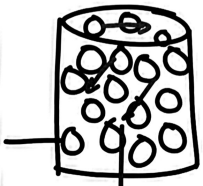
Volume / Pressure Constant



↓ gravity

Liquid

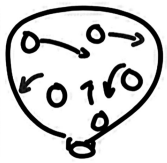
V/P Constant



↓ gravity

Can't Measure Mass

gas



Volume (V): space of the gas (of container)

Pressure (P): # collision of part.

Temp (T): Speed of part.

gravity has little impact on gas

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Particles and mol of a gas

$mol_{gas}\ (n) = \frac{\#\ part.\ gas}{N_A}$

N_A = Avagadro's # (# parts./mol)

Molar Volume = Vol gas in $\frac{1\ mol}{(N_A\ part.)}$

(1 mol gas = 22.4 L gas)

Ideal gas law

Compares P, V, T to mol

$PV = nRT$

R = Ideal gas constant, allows ideal comparison

Converting w/ gases

$V_{gas} \longrightarrow$ mol gas

$$\frac{\text{___ L}_A \mid 1 \text{ mol}_A}{\mid 22.4 \text{ L}_A}$$

mol gas $\longrightarrow V_{gas}$

$$\frac{\text{___ mol}_A \mid 22.4 \text{ L}_A}{\mid 1 \text{ mol}_A}$$

Ex: $CO_2(g)$, 32.9L, convert to mol $CO_2(g)$

$$\frac{32.9 \text{ L } CO_2 \mid 1 \text{ mol } CO_2}{\mid 22.4 \text{ L } CO_2}$$

$$= 1.47 \text{ mol } CO_2(g)$$