

States of Matter

Solid - const shape
particles \approx locked in place

liquid - move relative to each but
still stick together

gas - particles \approx independent

4 properties of gases (definitions, symbols and units)

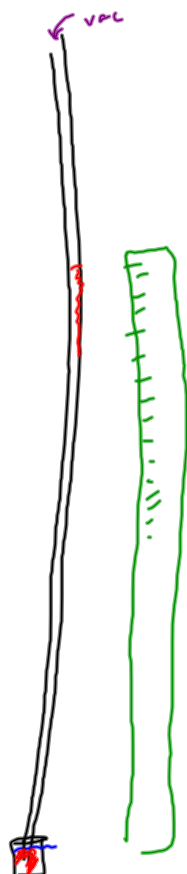
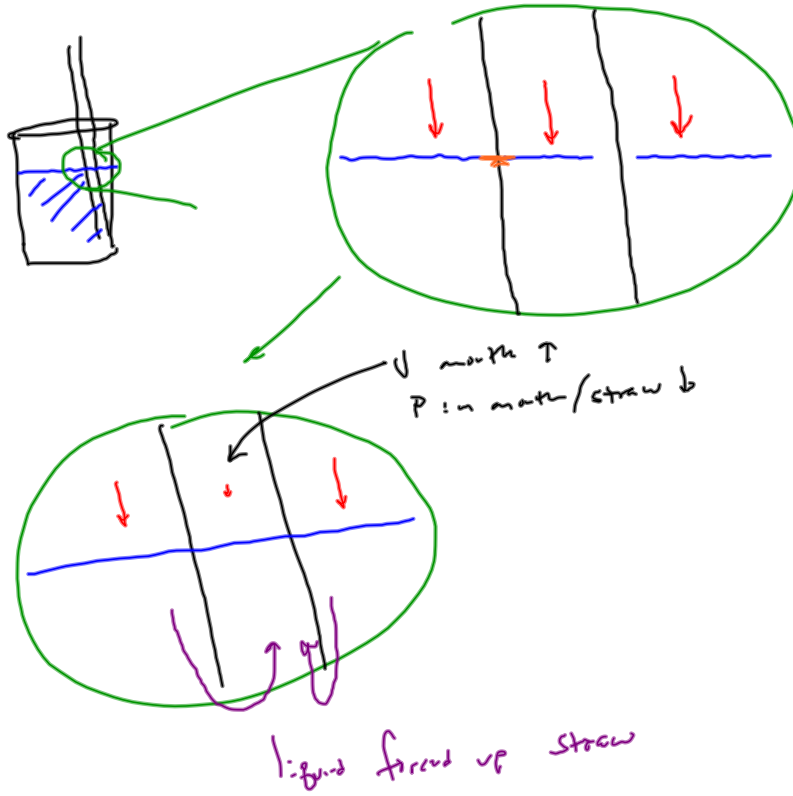
Volume (V) \rightarrow size of container - L

Temperature (T) \rightarrow measure of ave KE - K

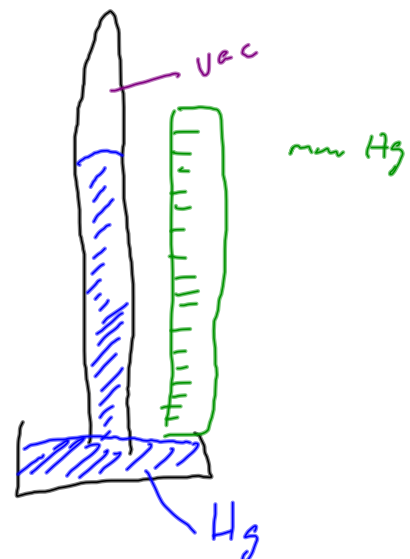
amount (n) \rightarrow number of mc or moles - moles

Pressure (P) \rightarrow force/area
 \uparrow
mc colliding

Pressure



barometer
as atm P ↑
... liquid ↑



Sea level
 P ... every hour 24/7 ... 365 ... average \rightarrow 760 mmHg

$$1 \text{ mmHg} = 1 \text{ Torr}$$

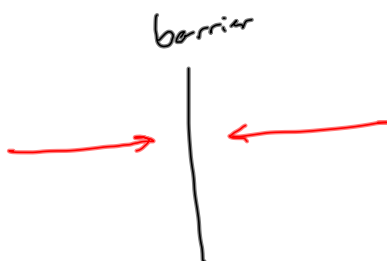
$$1 \text{ atmosphere (atm)} = 760 \text{ mmHg}$$

$$\text{Kilopascal (kPa)} \quad 1 \text{ atm} = 101.325 \text{ kPa}$$

$$1 \text{ Pa} = 1 \text{ N/m}^2$$

Some reminders (vacuum and opposing forces)

vacuum \rightarrow nothing



Kinetic Molecular Theory

- ① Gases are made of particles that move in straight lines until they hit something
- ② When they collide they do so elastically (no loss of KE)
- ③ Particles of a gas take up no space

Law v. Theory

→ explanation
→ mathematically defined relationship