

7 SI Base Units

- Length m
- Time s
- Mass kg
- Current A
- Temperature K
- **Amount** of Substance **mol**
- Luminous Intensity cd

What is a mole?

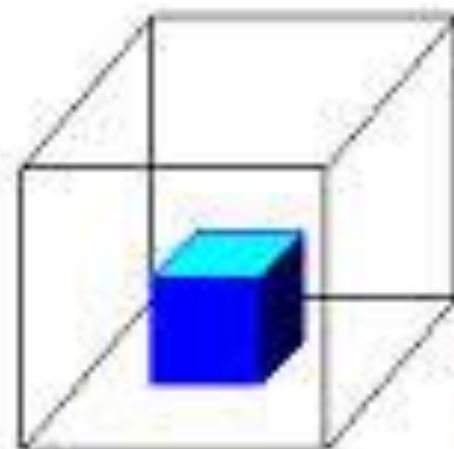
- Avogadro's number

$$N_A = 6.02 * 10^{23} \text{ particles/mole}$$

- Molar Mass is atomic mass in grams



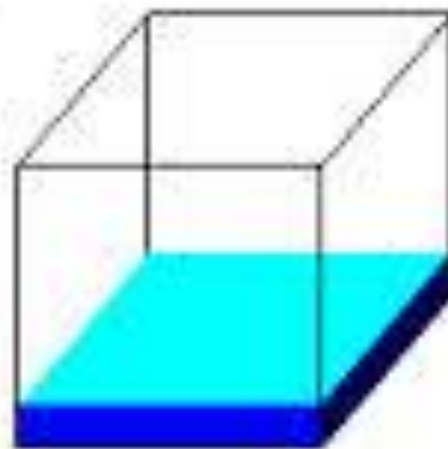
States of Matter



Solid

Holds Shape

Fixed Volume

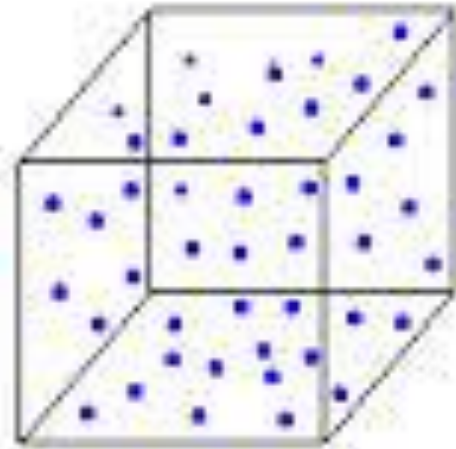


Liquid

Shape of Container

Free Surface

Fixed Volume



Gas

Shape of Container

Volume of Container

Gas State

- What defines gas state?
- Pressure (Pascal)
- Volume (m^3)
- Temperature (K)

Ideal gas

- Ideal Gas Law

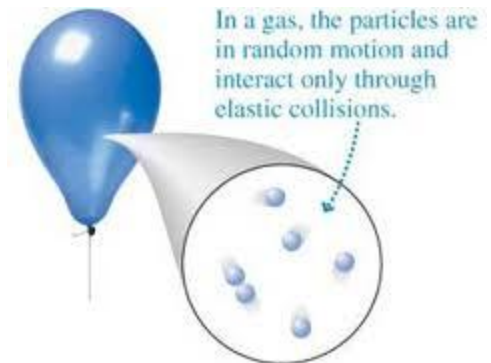
$$PV = nRT$$

- Universal Gas Constant

$$R = 8.31 \text{ J / (mol K)}$$

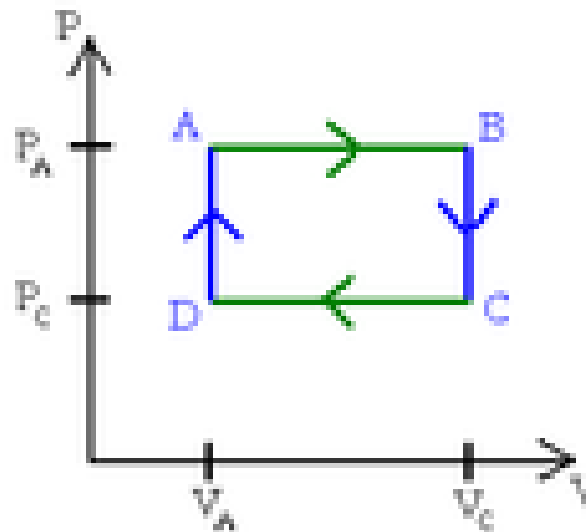
Kinetic Theory of Gases

1. Number of molecules large. Separation large.
2. Molecules move randomly.
3. short-range force; elastic collision
4. Elastic collision with wall.
5. All molecules are identical.



PV - diagram

- Which process has constant pressure ?



More PV - diagram

- Any process has pressure as constant in P-V diagram?

