Be REFLECTIVE: Review your learning

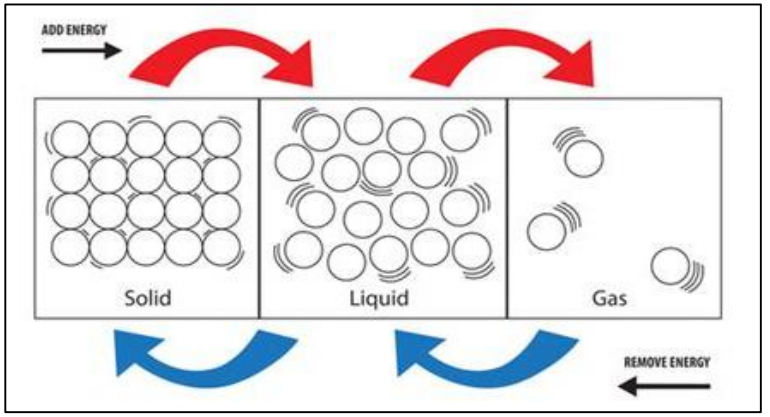
KNOWLEDGE ORGANISER
CHEMISTRY: Matter

Name:

Properties of States of Matter

State	Can you compress (squash) the substance in this state?	Does the substance flow ?	Shape
Solid	No	No	Fixed, unless you apply a force
Liquid	No	Yes	Takes the shape of the bottom of its container
Gas	Yes	Yes	Takes the shape of the whole container

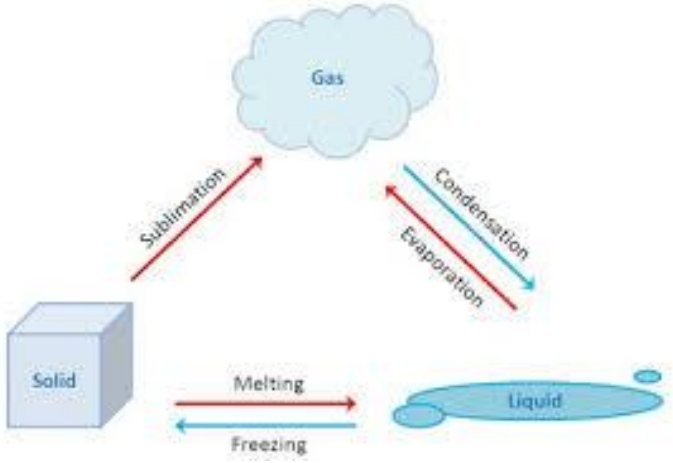
States of Matter



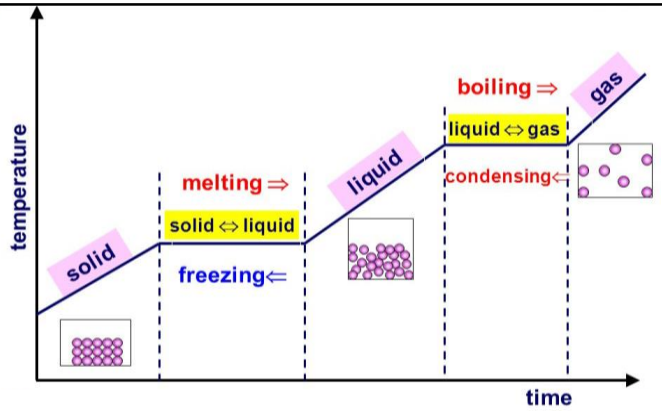
Changes in the States of Matter

Particles lose energy to the surroundings

Particles gain energy from the surroundings



Heating/Cooling Curves



Sharp/ distinct melting and boiling points can be used to identify *pure* substances.

If these points are not sharp then a substance must be impure (mixture of substances).

The Particle Model

Advantage

- Explains properties of particles.

Disadvantage

- Assumes all particles (of different elements) are the same size
- Assure all particles are the same distance apart

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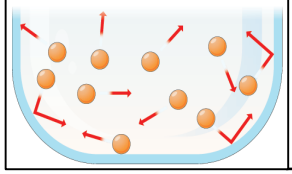


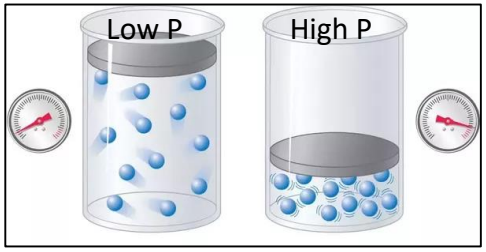
Gas Pressure

Gas ONLY

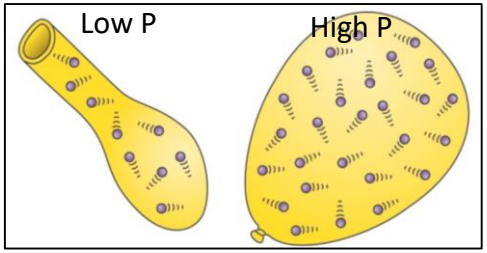
The pressure created by gas particles colliding with the side of a container.

Factors that affect pressure include:

1. Number of particles

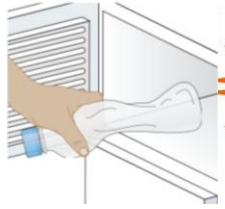


- **Smaller volume**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)



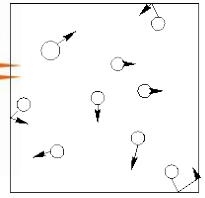
- **More particles**
- More crowded particles
- More collisions with surface
- Higher Gas Pressure (P)

2. Temperature

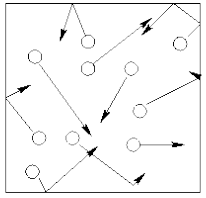


Cooling Down

Heating Up



Cool gas, fewer and less energetic collisions



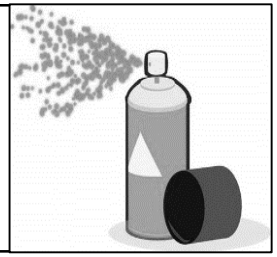
Hot gas, more and more energetic collision

Gas and Liquid

Diffusion

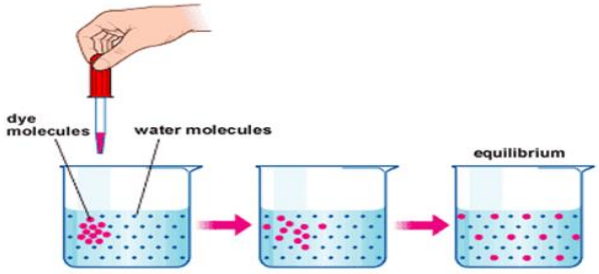
The random moving and mixing of particles from a high to low concentration.

Factors that affect pressure include:



Experiment:

Diffusion of a dye in water



Factors	Effect	Reason
1. Temperature	↑Temperature ↑ Rate of diffusion	*More* Energy for Particles. *More* Particles move faster.
2. Particle Size	↑Particle Size ↓Rate of diffusion	More heavy/big particle. Particles move slower.
3. State of Particle	**Liquids** ↓Rate of diffusion **Gases** ↑Rate of diffusion	Gas particles are further apart and have more energy. *More* Particles move faster.