Solids, Liquids & Gases

Point Of Comparison	Solids	Liquids	Gases
Arrangement	Regularly arranged	Irregularly arranged	Irregularly arranged
Packing	Closely packed	Closely packed	Loosely packed
Spaces between particles	Touching	Touching	Not touching
Movement of particles	Vibrate in place	Random slow & slide past each other	Random fast
Attraction forces	Very strong	Medium	Very weak
Volume	Fixed	Fixed	Not fixed
Shape	Definite	Indefinite	Indefinite

Kinetic Theory

Lighter particles move faster than heavier particles (depends on Mr).

Gas particles can spread/expand to fill any volume, due to *weak intermolecular attraction forces* between the molecules.

Increasing the temperature causes the particles to gain kinetic energy and move faster.

Increasing the temperature causes the particles to move further apart while decreasing the temperature causes the particles to get closer together.

For gases, the pressure is due to the collisions of gas particles with the walls of the container.

For gases, when temperature is increased and the particles move faster, the number of collisions increases, causing the pressure to increase.

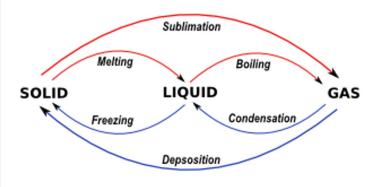
Diffusion

It is the movement of particles from area of high concentration to area of low concentration, until they are evenly spread.

The rate of diffusion depends on the molecular mass...The smaller the Mr, the faster the rate of diffusion.

Increasing the temperature increases the speed of molecules and thus, the rate of diffusion increases (particles diffuse in a shorter time).

Conversion of Physical States

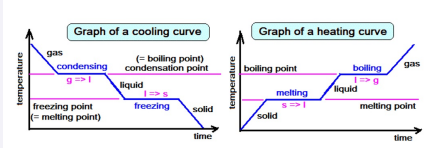


Checking the state of a substance

Solids	Melting & Boiling points > room temperature (25°C)
Gases	Melting & Boiling points < room temperature (25°C)
Liquids	Melting point < room temperature (25°C) < Boiling point

$ Melting and Boiling points are specific for each substance.
$ Impurities increase the boiling points and decrease the melting points of substances.
$ Impurities have a range/less sharp melting and boiling points.

Heating & Cooling Curves



Temperature does not change during melting and boiling as the energy supplied is used to *overcome the attraction forces* between molecules.

Comparison between Evaporation & Boiling

Evaporation	Boiling
Occurs at the surface of the liquid	Occurs throughout the whole liquid to all of the molecules
Happens at any temperature	Happens at a specific temperature
No bubbles form	Bubbles form