Chemistry Matter 1- Learning journey KS3

States of matter	Changes of State	Explaining changes of state	Changing of state investigation	Changing of state investigation Analysis	Melting and boiling point	Gas Pressure	Diffusion

Key Words

Key Word	Definition
Melting point	The temperature when something melts
Boiling Point	The temperature when something boils
Volume	The amount of space a substance takes up
Attraction	Pulled together
Diffusion	Where particles spread apart. (Move from a high to low concentration)
Gas Pressure	Caused by particles colliding with objects causing a force on that object.
Compress	Making objects take up less volume
Force	A push or a pull acting on an object

Misconceptions

When drawing particles in a liquid they should be touching

You can only compress gasses. Not solids and liquids.

Key questions

Using the particle model explain why solids have a fixed shape.

Explain why a tyre inflates when particles are pumped into it.

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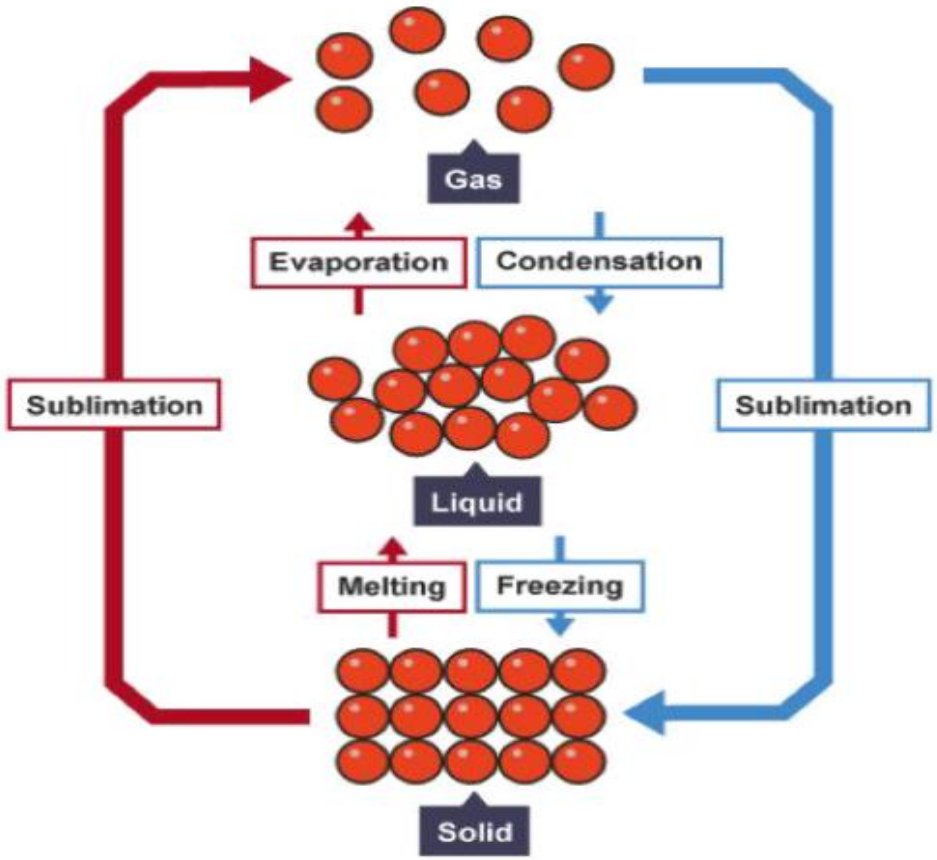
States of matter:

All matter is made up of particles. Particles are found in all 3 states of matter. Particles in the 3 states behave differently.

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

Changes of state:



Forces between particles

Solid: There are strong forces of attraction between the particles in a solid. Therefore, particles can only vibrate in a fixed positions.
Liquid: There are weaker forces of attraction between the particles in a liquid. Therefore, the particles are close together and are able to move around each other.
Gas: The forces of attraction between the particles are overcome. Therefore, the particles are far apart and move quickly in all directions

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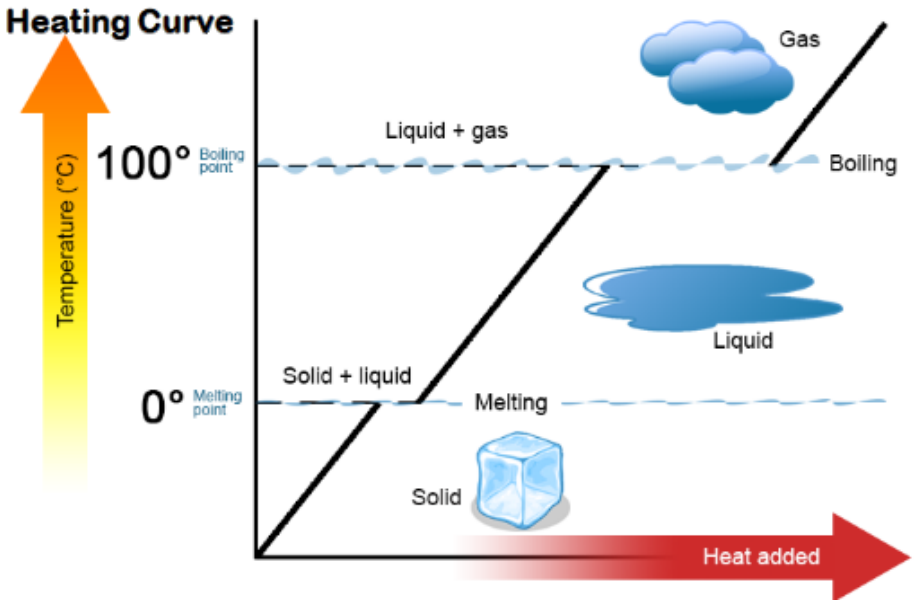
Melting and boiling point



Factor effecting diffusion

There are 2 factors affecting the rate of diffusion:
1. Temperature: When temperature increases, particles gain more energy. They can then move and spread out at a higher rate.
2. Concentration: When concentration increases, the rate of diffusion increase

What causes pressure?

Gas pressure in caused when particles **collide** with an object or walls of a container. This causes a **force** on the wall which causes **pressure**.
We can remember this using the letters CFP

Diffusion

Diffusion is the movement of particles from a higher concentration to a lower concentration.
Diffusion will stop when particles spread themselves evenly.
Diffusion occurs in liquids and gases but not in solids, because particles in a solid are not free to move


Diffusion

Gas Pressure

As Volume decreases pressure increases as particles collide more frequently with the walls of the container.

As temperature increases pressure increases as particles are moving faster so there are more collisions with the walls of the container.