

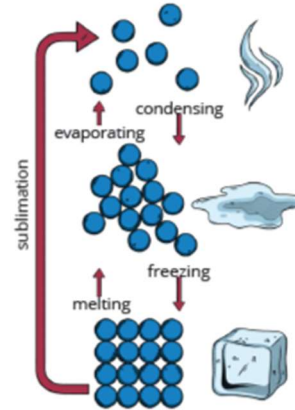
Knowledge Organiser

	Solid	Liquid	Gas
particle model diagram			
particle arrangement	regular structure no space between particles	irregular structure very little space between particles	irregular structure large space between particles
volume and shape	fixed volume fixed shape	fixed volume shape changes to fill bottom of container	volume increases to fill capacity shape changes to fill capacity
able to flow	no (forces between particles are very strong and hold them in fixed positions)	yes (forces between particles are weak and particles slide over one another)	yes (forces between particles are very weak and particles move randomly and rapidly)
density	high cannot be compressed (particles are already tightly packed)	high cannot be compressed (particles are already tightly packed)	low can be compressed (particles are forced closer together)
particle energy levels	low (particles vibrate around a fixed point only)	moderate (particles can move and flow but slowly)	high (particles moving rapidly and freely)
examples	wood, metal, stone, plastic	water, milk, bleach, acid	air, oxygen, carbon dioxide

Changes of State

The arrangement of particles changes when the substance changes state.

Sublimation is when a solid changes to a gas, without going through the liquid phase.



Gas Pressure

Gas pressure is the force exerted by the gas particles on the wall of the container it is in. The more frequently air particles hit the walls, the higher the pressure rises.

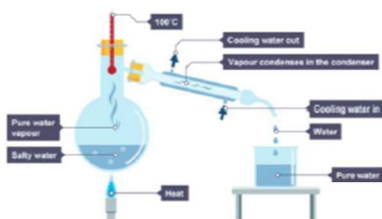
Gas pressure is affected by:

- amount of gas;
- volume of container;
- temperature.



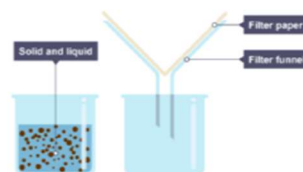
Distillation:

- A method used for separating the solvent from a solution. E.g. water can be separated from a salt solution because the water has a much lower boiling point than the salt.
- Salt water is heated. The water evaporates and its vapours rise.
- The vapours rise and pass into the condenser, where they cool and condense.
- Liquid water drips into a beaker and the salt will be left in the round bottom flask.

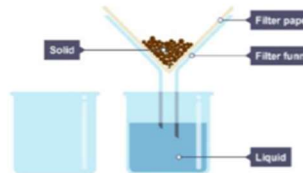


Filtration:

- A method for separating an insoluble solid from a liquid. A beaker containing a mixture of insoluble solid and liquid. There is filter paper in a filter funnel above another beaker.



- The mixture of insoluble solid and liquid is poured into the filter funnel.
- The liquid particles are small enough to pass through the paper as a filtrate. The solid particles are too large to pass through the filter paper and stay behind as the residue.



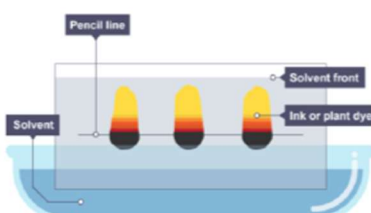
Evaporation:

- A method used to separate a soluble solid from a liquid.
- A solution is placed in an evaporating basin and heated with a Bunsen Burner.
- The water will begin to evaporate and solid particles will begin to form in the basin.
- Once the water has evaporated, it will leave solid crystals behind.

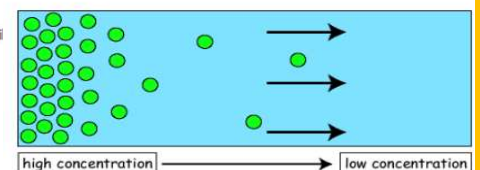


Chromatography:

- Paper chromatography is a method for separating dissolved substances from one another. Often used when the dissolved substance are coloured such as inks, food colouring or plant dyes.
- A pencil line is drawn on the paper, and spots of ink are placed on the line.
- There is a solvent usually water or ethanol in a container/beaker.
- The paper is lowered into the solvent. The solvent travels up the paper, taking some of the substances with it.
- As the solvent travels up the paper, the different coloured substances are spread apart.



Diffusion



● solute

Diffusion is the movement of particles from an area of **HIGH CONCENTRATION** to an area of **LOW CONCENTRATION** along a **DIFFUSION GRADIENT**