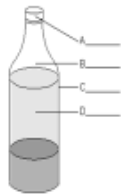


Particles Knowledge Organiser

▪ boiling	The change of state which occurs when a liquid rapidly changes into a gas (at the liquid's boiling point).
▪ boiling point	The temperature at which a liquid rapidly changes into a gas.
▪ bonds	Forces holding particles together.
▪ carbon dioxide	A gas produced during burning.
▪ Celsius scale	Standard temperature scale which sets the freezing point of water at 0°C and its boiling point at 100°C.
▪ compressible	A substance which can be squashed when a force is applied
▪ changes of state	When the particles in a substance lose or gain kinetic energy the substance changes state.
▪ concentration	The number of particles in a given volume
▪ condensation	Change of state which occurs when a gas changes into a liquid.
▪ contraction	When a substance gets smaller without any changes in mass.
▪ cooling	When a substance loses energy and its temperature falls.
▪ cooling curve	Graph of temperature against time as a substance is steadily cooled.
▪ crystallisation	A process producing crystals. A molten substance or a solution is cooled.
▪ diffusion	The movement of particles from an area of high concentration to an area of lower concentration.
▪ dissolve	When a solute mixes completely with a solvent
▪ evaporation	Change of state which happens when a liquid changes into a gas (can happen below the boiling point).
▪ expansion	When a substance gets bigger in size without any change in mass.
▪ filtrate	Liquid which passes through filter paper
▪ filtration/filtering	A method of separating an insoluble solid from a mixture.
▪ flow	The movement of a liquid as its particles move over each other. A liquid such as water flows much faster than a thicker liquid such as treacle.
▪ freezing	Change of state which occurs when a liquid changes into a solid.

▪ freezing point	The temperature at which a liquid turns into a solid (this is the same temperature as the melting point of the substance).
▪ gas	A substance with no fixed shape or volume.
▪ heating	When a substance gains energy and its temperature rises.
▪ heating curve	Graph of temperature against time as a substance is steadily heated.
▪ kinetic energy	All moving objects/particles have kinetic energy
▪ liquid	A substance with a fixed volume, but no fixed shape. A liquid takes the shape of whatever container it is in.
▪ matter	All the substances and materials of the universe which are made up of atoms and molecules.
▪ melting	The change of state which occurs when a solid changes into a liquid.
▪ melting point	The temperature at which a solid turns into a liquid (and vice versa).
▪ particle theory	Theory which explains the properties of matter by assuming that all substances are made up of tiny particles.
▪ particles	The tiny pieces everything is made up of.
▪ pressure	In liquids and gases pressure is exerted on the walls of a container due to collisions between the liquid/gas particles and the wall.
▪ properties	A description of what a substance does or looks like.
▪ residue	Solid which does not pass through the filter paper
▪ saturated solution	A solution in which no more solute will dissolve
▪ solid	A substance in which the particles inside are tightly bound together, giving it a definite shape.
▪ solute	Solid part of a solution
▪ solution	Made up of a solute dissolved in a solvent
▪ solvent	Liquid part of a solution
▪ states of matter	The three different forms of matter: solid, liquid and gas.
▪ sublimation	When a solid changes directly into a gas without melting first (and vice versa).
▪ temperature	A measurement of how hot or cold something is.
▪ theory	An idea backed up by evidence which is widely accepted

▪ vapour	A substance in a gaseous state.
▪ vibrate	Moves very quickly backwards and forwards around a fixed point.
▪ volume	The space taken up by an object (units: litres (l), cubic centimetres (cm ³) or cubic metres (m ³)).



Label the states of matter shown in the bottle diagram.
 A - solid
 B - gas
 C - solid
 D - liquid

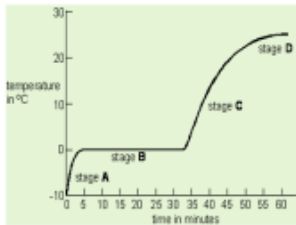
Y7 Particles

Match the change of state to the correct name.

change of state	name
solid to liquid	evaporating
liquid to gas	melting
gas to liquid	condensing
liquid to solid	freezing

Property	solid	liquid	gas
Fixed shape	X		
Fixed volume	X	X	
Easy to squash			X
Flows easily		X	X

The **Particle theory** states that all materials are made up of **PARTICLES** which are constantly **MOVING**.

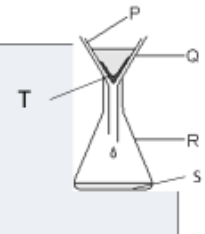


The graph shows the heating curve of water. What is state is the water in at:
 Stage A: **SOLID**
 Stage C: **LIQUID**
 What is happening at stage B? **CHANGE OF STATE - MELTING**
 How do you know? **NO CHANGE IN TEMPERATURE/LINE IS STRAIGHT**

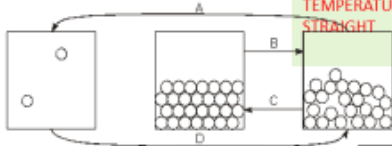
Diffusion happens in **LIQUIDS** and **GASES**. The particles spread out from where they are in **HIGH** concentration to where they are in **LOW** concentration.

Identify P, Q, R and S.

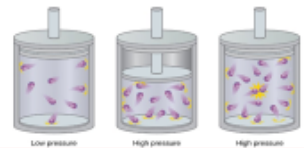
- P = **FILTER PAPER**
- Q = **FILTER FUNNEL**
- R = **CONICAL FLASK**
- S = **FILTRATE**
- T = **RESIDUE**



Name this method of separation **FILTRATION/FILTERING**



Name this method of separation. When would you use this method of separation?
EVAPORATION/CRYSTALLISATION . TO GET A SOLUBLE SOLID FROM ITS SOLUTION OWTTE



Pressure is caused by **PARTICLES** Moving particles **BUMP** into each other and the hit the **SIDES** of the container. The forces of the particles hitting the sides causes **PRESSURE**. The more particles hitting the sides the **HIGHER** the pressure.

Name the changes of state shown in the diagram.
 A. **EVAPORATION/EVAPORATING**
 B. **MELTING**
 C. **FREEZING**
 D. **CONDENSATION/CONDENSING**

Solutions	
Fill in the missing words	
Word	Meaning
SOLUTE	Solid part of a solution
SOLUTION	Made up of a solute dissolved in a solvent
SOLVENT	Liquid part of a solution
SATURATED	A solution in which no more solute can dissolve