

# Science • States of Matter



## Crucial Knowledge

- things are composed of a matter commonly in one of three states of matter: solid, liquid or gas
- things are made of particles (tiny building blocks) and that these are organized differently in different states
- materials can change state when temperature changes
- there are bonds between the particles (building blocks) in a solid; as temperature increases, these bonds are somewhat overcome as the particles absorb energy and solids can change into liquids; with a further increase in temperature, the particles become even more energetic and the bonds are overcome entirely so the liquid changes into a gas
- when solids turn into liquids, this is called melting and that the reverse process is called freezing
- the melting point of water is  $0^{\circ}\text{C}$  and that the boiling point of water is  $100^{\circ}\text{C}$
- when liquids turn into gases, this is called evaporation and that the reverse process is called condensation



## Key Vocabulary



**Solid:** material that keeps its shape unless a force is applied to it.



**Liquid:** takes the shape of its container, can be poured and keeps a level, horizontal surface



**Gas:** will fill all available space



**Melting:** when a solid changes to a liquid



**Freezing:** when a liquid turns to a solid



**evaporation** – when a liquid turns into a gas



**water vapour** – this is water that takes the form of a gas,

**condensation** – when a gas turns to liquid



**precipitation** – Liquid or solid particles that fall from a cloud as rain, sleet, hail or snow

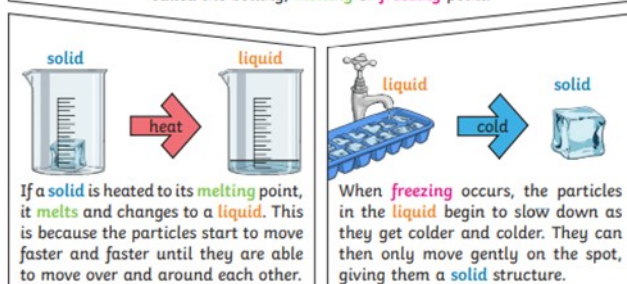


## Diagrams / Images

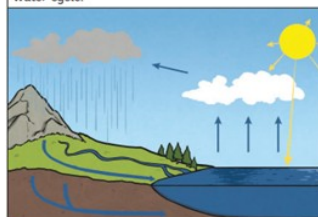
There are three states of matter.

Solid	Liquid	Gas
Particles in a <b>solid</b> are close together and cannot move. They can only vibrate.	Particles in a <b>liquid</b> are close together but can move around each other easily.	Particles in a <b>gas</b> are spread out and can move around very quickly in all directions.

When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.



Condensation and evaporation occur within the water cycle.



1. Water from lakes, puddles, rivers and seas is **evaporated** by the sun's heat, turning it into **water vapour**.
2. This **water vapour** rises, then cools down to form water droplets in clouds (**condensation**).
3. When the droplets get too heavy, they fall back to the earth as rain, sleet, hail or snow (**precipitation**).



## Important People



**John Dalton (1766-1844)**

Chemist, physicist and meteorologist best known for introducing the theory that all matter is composed of tiny particles called atoms.

**Beth Koigi** Kenyan engineer who created a filter which extracts water vapour from the air. This has helped to create clean drinking water in areas it was scarce.



## We Are Building Our Knowledge From

- Uses of Everyday Materials (Y2)

## This will help when we learn about

- Properties and Changes of Materials (Y5)