

Vocabulary

Solid - firm or stable in shape, with particles very close together.

Liquid - a substance that flows easily but has constant volume, with particles close but moving around.

Gas - a substance with no fixed shape that will expand to fill the whole of a container, particles far apart and moving around.

Heating - raising the temperature of something.

Cooling - lowering the temperature of something.

Freezing - turning into ice or another solid as a result of cooling.

Freezing point - the temperature at which a liquid turns into a solid when cooled.

Melting - turning into a liquid as a result of heating.

Melting point - the temperature at which a solid will melt.

Temperature - a measure of how hot or cold something is.

Condensation - the process of turning from vapour (a gas) into a liquid.

Evaporation - the process of turning from vapour (a gas) into a liquid.

Precipitation - rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere.

Water cycle - the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation.

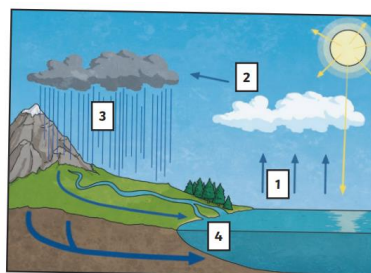
Particles – smallest known building blocks which have no substructure

States of Matter

Year 4

The water cycle is the movement of water within the Earth's atmosphere and the way that it is stored in its various states of matter.

1. **evaporation** – When the surface of the water is heated, the water will begin to change from a liquid to a gas through evaporation.
2. **condensation** – As the water vapour rises, the conditions become much cooler. The water vapour begins to change back into a liquid, forming clouds.
3. **precipitation** – Once the water vapour has condensed into liquid water, it will fall back to the ground through precipitation.
4. **accumulation** – When the water reaches the ground through precipitation, it collects in rivers and streams (run-off) and underground (groundwater) and is transported back to larger bodies of water such as lakes, seas or oceans.



Solids, Liquids and Gases

What is a solid?

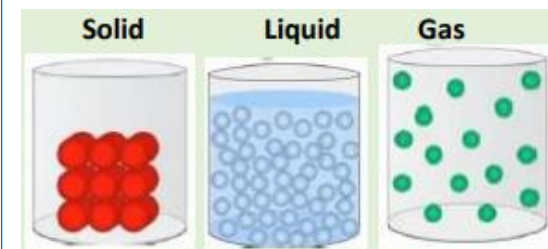
When materials hold their shape. Their particles are closely packed and form a regular pattern. Their shape is fixed and they will always take up the same amount of space. Examples: Ice, Wood, Glass, Diamond.

What is a liquid?

When materials hold the shape of the containers they are in and so can change shape. Their particles are close together but can move over each other. Liquids can be poured. Examples: Water, Milk, washing-up liquid.

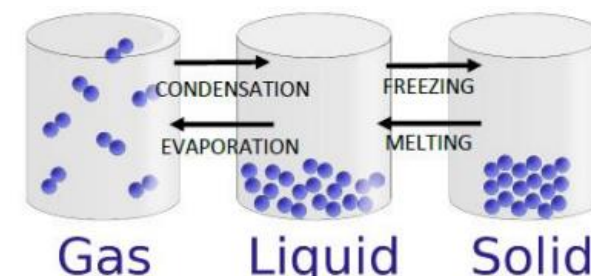
What is a gas?

Gases can escape from open containers. They often cannot be seen. They have particles which can spread it and move in all directions. Examples: Steam, Hydrogen, Oxygen, Carbon Dioxide.



Changes of State (heating and cooling)

Warming solid ice makes it melt into liquid water. Adding more heat makes it evaporate, at 100°C, into steam (a gas). When it is cooled it condenses back into liquid water. If it is cooled to 0°C it freezes and forms.



Melting Point

This is the **temperature** at which a **solid** turns into a **liquid**.

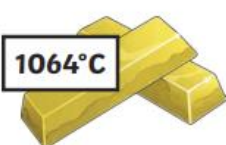
0°C



32°C



1064°C



Top Takeaways

At the end of this unit you will be able to;

- *compare and group materials according to whether they are solids, liquids or gases.
- *observe that some materials change state when they are heated or cooled and know the temperature in degrees Celsius at which this happens.
- *identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.