





Lower Key Stage 2 - Forest Academy Knowledge organiser - States of matter

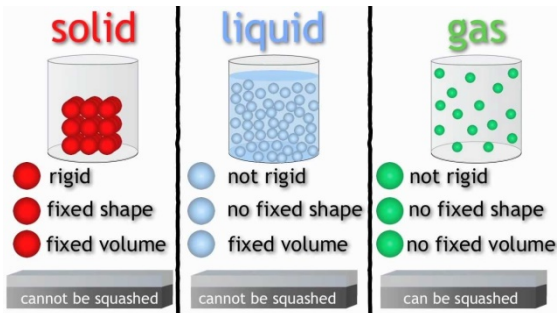
Know how to...

- Compare and group materials together, according to whether they are solids, liquids or gases
- Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

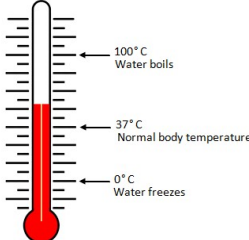
Matter can change from one state to another if it is heated or cooled. If ice (a solid) is heated it changes to water (a liquid). This change is called melting. If water is heated, it changes to steam (a gas).

Changing State			
Evaporation	Condensation	Melting	Freezing
Evaporation occurs when a liquid changes into a gas or water vapour.	Condensation is when a gas cools and changes to a liquid.	This is when a solid is heated and changes to a liquid.	Freezing is the process of a liquid cooling and changing to a solid.
			

Diagrams



Key vocabulary

matter	Objects that take up space and have a mass are called matter. Everything around you is made up of matter.
solid	A solid holds its shape and has a fixed volume.
liquid	A liquid fills up the shape of the bottom of a container. It forms a pool, not a pile and also has a fixed volume with a level horizontal surface.
gas	A gas can escape from an unsealed container. It fills up the space it is in, and does not have a fixed volume.
evaporation	Changing from a liquid to a gas.
condensation	Changing from a gas to a liquid.
temperature	The degree or intensity of heat present in a substance or object and shown by a thermometer or perceived by touch.
celsius (°C)	A scale of temperature on which water freezes at 0°C (and boils at 100°C) under standard conditions.
	
molecules	The very tiny particles that make matter.
reversible	Capable of being reversed so that the previous state is restored.
irreversible	Not able to be undone or altered – a chemical change has occurred.

Solids

The properties of solids include:

- Solids stay in one place and can be held.
- Solids keep their shape. They do not flow like liquids.
- Solids always take up the same amount of space. They do not spread out like gases.
- Solids can be cut or shaped.
- Even though they can be poured, sugar, salt and flour are all solids. Each particle of salt, for example, keeps the same shape and volume.



Liquids

The properties of liquids include:

- Liquids can flow or be poured easily. They are not easy to hold.
- Liquids change their shape depending on the container they are in.
- Even when liquids change their shape, they always take up the same amount of space. Their volume stays the same.



Examples of liquids include water, honey and milk.

Gas

The properties of gases include:

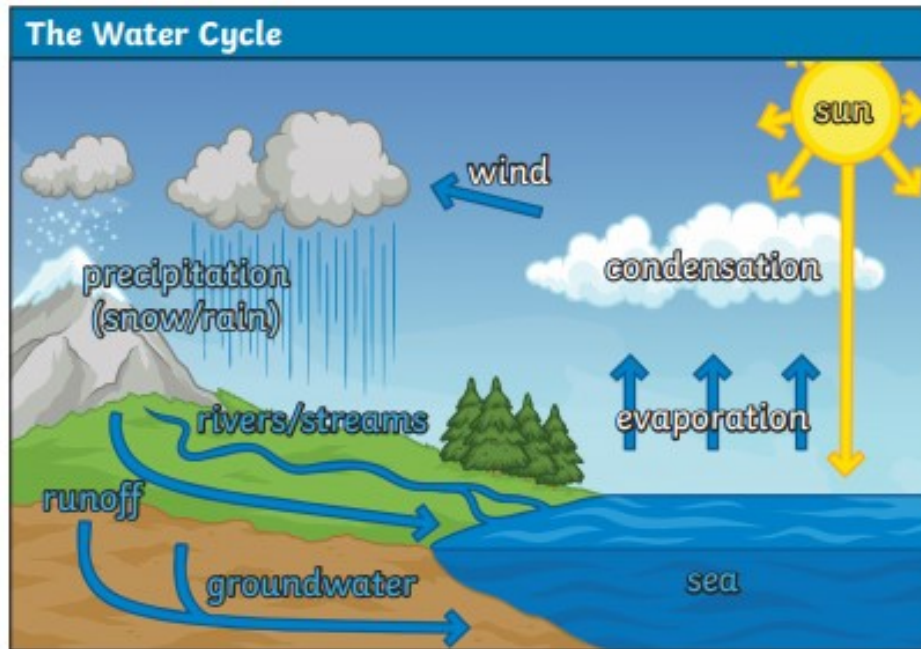
- Gases are often invisible.
- Gases do not have a fixed shape. They spread out and change their shape and volume to fill up whatever container they are in.
- Gases can be squashed.



Examples of gases include steam, helium and oxygen.

The Water Cycle

The water cycle is the journey water takes as it moves from the land to the sky and back again. It follows a cycle of evaporation, condensation and precipitation.



Key Water Cycle vocabulary

evaporation	Is the process by which water changes from a liquid to a gas. The change of state is due to an increase in temperature/
condensation	The process by which the water vapour in the atmosphere cools and changes into liquid water. This is the result of hot air becoming cool.
precipitation	Water that falls from the clouds towards the ground e.g. rain, hail, sleet or snow.
collection	Precipitation is collected in bodies of water, such as rivers, lakes and oceans.
runoff	Is precipitation that did not get absorbed into the soil and makes its way from the surface into places where water collects.

A famous scientist

Humphry Davy (1778-1829)

In 1798, at the age of 19, a self-taught British chemist named Humphry Davy got a job testing newly discovered gases to see if any of them could cure diseases. Fearlessly testing gases on himself, he found that one — nitrous oxide — made people laugh.

