



Science Focus:

States of Matter

Year 4

Term: 2A

Grouping Materials

Materials fall into four main categories

- Solids
- Liquids
- Gases

How to spot each type of material

Solids

- Solids stay in one place and can be held.
- Most solids keep their shape. They do not flow like liquids. (Some solids like sand or salt can be poured)
- Solids always take up the same amount of space. They do not spread out like gases.

Liquids

- Liquids can flow or be poured easily. They are not easy to hold.
- Liquids change their shape depending on the container they are in.

Gases

- Gases are often invisible.
- Gases do not keep their shape. They spread out and change their shape and volume to fill up whatever container they are in.

What? (Key Vocabulary)

Spelling	Definition/Sentence
Temperature	The measure of warmth or coldness of an object.
Celsius	The common scale in the UK for measuring temperature.
Boils	To become so hot (100°C) that water bubbles and then turns into a gas.
Container	Something which holds things inside, like a box, jar or tub.

All matter in the Universe is made up of very small particles

Matter

All the 'stuff' encountered in everyday life, including air, water and different kinds of solids, is called matter because it has mass and takes up space.

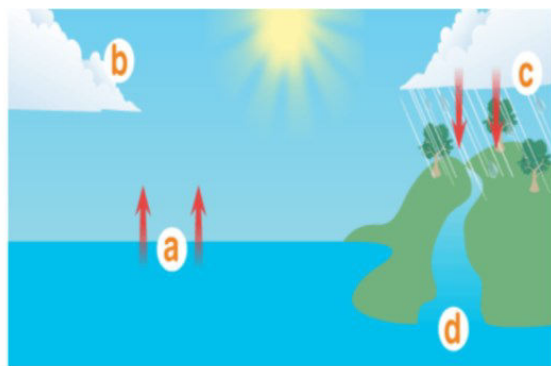
The Earth's atmosphere shapes its surface and climate

Radiation from the sun heats the Earth's surface, which is involved in creating climates. Water is constantly recycled through evaporation, condensation and precipitation.

Diagrams and Symbols

The Water Cycle

Water on the earth is constantly moving. It is recycled over and over again. This recycling process is called the **water cycle**.



a. Water evaporates into the air

The sun heats up water on land, and in rivers, lakes and seas and turns it into water vapour. The water vapour rises into the air.

b. Water vapour condenses into clouds

Water vapour in the air cools down and changes back into tiny drops of liquid water, forming clouds.

c. Water falls as rain

The clouds get heavy and water falls back to the earth in the form of rain or snow.

d. Water returns to the sea

Rain water runs over the land and collects in lakes or rivers, which take it back to the sea. The cycle starts all over again.

What are the changes of state?

What	Explanation	Name of process	Example
Solid to Liquid	When a solid melts it changes to a liquid.	Melting	When an ice cube melts.
Liquid to Gas	A liquid evaporates into a gas when it is heated.	Evaporation	When water on a roof is warmed up and turns to steam.
Gas to Liquid	When a gas it cooled it condenses into a liquid.	Condensation	When steam from the shower cools on the mirror it turns to water.
Liquid to Solid	When a liquid freezes it turns into a solid.	Freezing	When the water in a pond freezes, it turns to ice.

At what temperature does each happen?

Boiling	<ul style="list-style-type: none"> • Water boils at exactly 100°C
Melting	Different solids melt at different temperatures: <ul style="list-style-type: none"> • Ice melts at 0 degrees Celsius (0°C). • (Chocolate melts at about 35°C)
Freezing	Water freezes at 0 degrees Celsius (0°C).
Evaporation and Condensation	<ul style="list-style-type: none"> • Water can evaporate and condense at any temperature. But, the warmer it is the faster the evaporation takes place.

Working as a Scientist

- Experiment with varying melting points of foodstuffs. (Do healthy foods melt quicker/ slower?)
- How can we get washing to dry faster?
- Create a solar water still.
- Create a model water cycle.