

# The National C of E Junior School

Science Focus:

States of Matter

Year 4

Spring 1st & 2nd Half-Term

## What? (Key Knowledge)

### Grouping Materials

Materials fall into four main categories

- Solids
- Liquids
- Gases
- Plasma (Not part of our curriculum)

### 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.

### Changes of state

What does changes of state mean?

- What a material changes from one material type to another, we say 'it has changed state.'

### What are the changes of state?

What	Explanation	Name of process	Example
Solid to Liquid	When a solid <b>melts</b> it changes to a liquid.	Melting	When an ice cube melts.
Liquid to Gas	A liquid <b>evaporates</b> 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 <b>condenses</b> into a liquid.	Condensation	When steam from the shower cools on the mirror it turns to water.
Liquid to Solid	When a liquid <b>freezes</b> 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"> <li>• Water boils at exactly 100°C (A hot bath is about 40°C)</li> </ul>
Melting	Different solids melt at different temperatures: <ul style="list-style-type: none"> <li>• Ice melts at 0 degrees Celcius (0°C).</li> <li>• (Chocolate melts at about 35°C)</li> </ul>
Freezing	Water freezes at 0 degrees Celcius (0°C).
Evaporation and Condensation	<ul style="list-style-type: none"> <li>• Water can evaporate and condense at any temperature. But, the warmer it is the faster the evaporation takes place.</li> </ul>

## 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

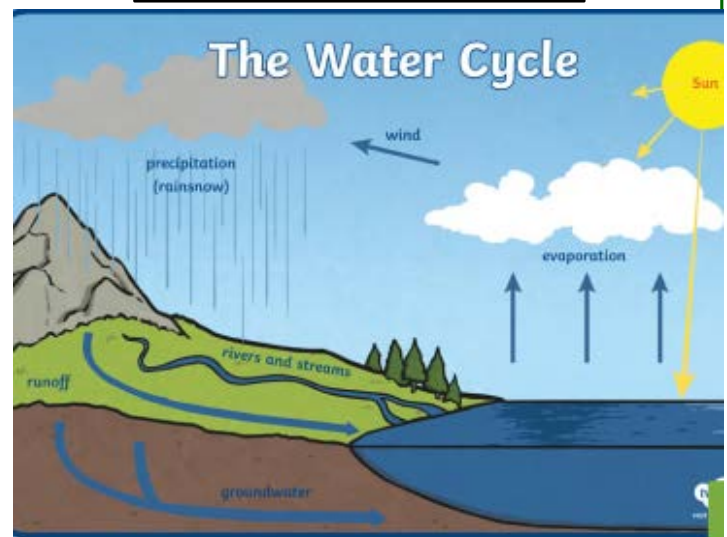
To become so hot (100°C) that water bubbles and then turns into a gas.

Freezes

To become so cold that water freezes.

## Diagrams and Symbols

### 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.

## Prior Knowledge

- To know the three main different types of rock and their characteristics
- To understand how fossils are formed
- To understand how soil is made, and to identify the different types of soil

