

Key Scientific Skills

	Year 4 States of Matter
Ask relevant questions and using different types of scientific enquiries to answer them	
Set up simple practical enquiries, comparative and fair tests	
Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	
Gather, record, classify and present data in a variety of ways to help in answering questions	
Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	
Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	
Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	
Identify differences, similarities or changes related to simple scientific ideas and processes	
Use straightforward scientific evidence to answer questions or to support their findings	

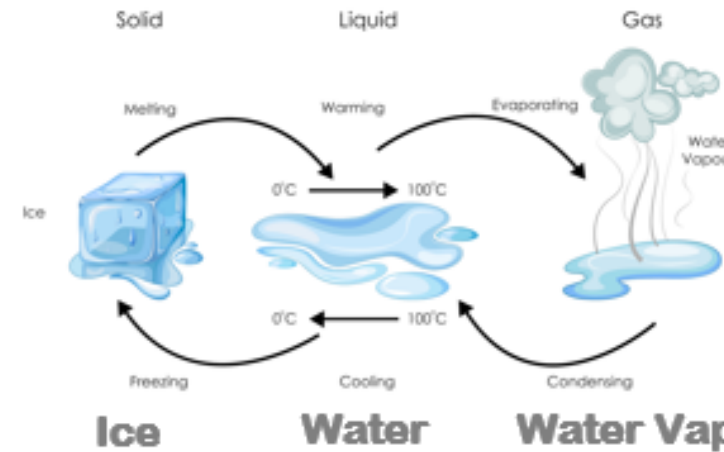
Bird in Bush Primary School Science Knowledge Organiser 2023—2024
 Knowledge Organiser adapted from the Developing Experts Science Scheme

Year 4 Science Spring 2 Unit - States of Matter



Changes of state

States of matter can change. Substances can be **heated** or **cooled** to change from one state to another.



In water, the **melting** and **freezing point** is **0°C** and the **boiling point** is **100°C**. Different substances have different melting, freezing and boiling points.

Lesson Sequence

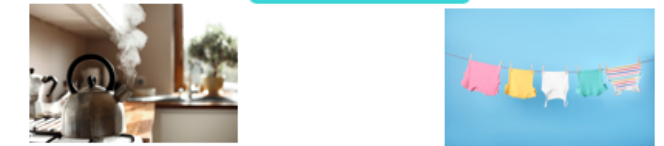
1. Compare and group the 3 states of matter
2. Explore how particles behave in solids, liquids and gases
3. Investigate melting points
4. Explore freezing and boiling points
5. Explore evaporation and condensation
6. Understand the water cycle

Condensation



When **water vapour (gas)** touches a **cold** surface, the particles lose energy and the bonds become **stronger**, turning the gas into a **liquid**.

Evaporation



Heating liquid water increases the particle's energy and the bonds become **weaker**, turning it into a **gas**. The **hotter** the temperature, the **faster** the rate of evaporation.

Rocket Words

Progression of Knowledge

Unit	YEAR 4
States of Matter	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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.</p>

	thermometer	an instrument that measures temperature in degrees Celsius (°C) or Fahrenheit (°F)
	melting point	the point where a solid melts and forms a liquid when heated
	freezing point	the point where a liquid freezes and forms a solid when cooled
	boiling point	the point where a liquid evaporates and forms a gas when heated
	solid	state of matter that holds its form and shape
	liquid	state of matter which flows and forms a pool
	gas	state of matter which flows, can spread out and can be squashed
	evaporation	the process where a liquid turns into a gas when heated
	particles	one very small part of matter
	condensation	the process where a gas forms a liquid when cooled
	water vapour	the name of water as a gas
	substance	the material, or matter, of which something is made

States of matter

Everything in our universe is made of **matter**. There are 3 states of matter:



Solid

Gas

Liquid

Solid particles have **strong** bonds so solids have a fixed shape. **Liquid** particles have **weaker** bonds and more energy so liquids can change shape. **Gas** particles have **really weak** bonds so gases can spread out and move freely.