



Science

Year 4

States of Matter

How can we investigate changes of state?

Shakespeare
Primary School
and Nursery



States of Matter

Solids stay in one place and can be held. They keep their shape and do not flow like liquids.

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

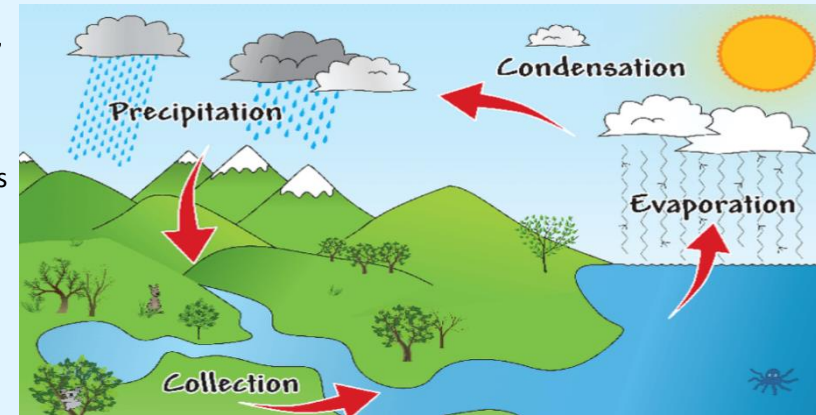
Gases are often invisible. They spread out and change their shape to fill up whatever container they are in.

Some materials change state when they are heated or cooled. When some solids are heated, they **melt** and turn into a liquid. The temperature this happens at is called the melting point, and it is measured in degrees Celsius (°C). When a liquid is cooled, it **freezes** and turns into a solid. When a liquid is heated it **boils** and turns into a gas. If you heat water slowly at a lower temperature than boiling point, then the water on the surface will **evaporate**. When a gas is cooled, it condenses, and changes into a liquid.



The Water Cycle

Water is heated by the sun, and evaporates into the atmosphere as water vapour. It then condenses into tiny droplets and forms clouds (**condensation**). Eventually, it falls back to earth as rain drops. The water goes round and round, **evaporating** and **condensing**.



A Scientist Just Like Me!



Dr Zoe Ayres is an English water scientist. Zoe collects water samples from rivers and streams and even taps at home to make sure that the water is safe. If it is unsafe she uses chemistry to clean the water so that it is safe to drink and safe for the environment.

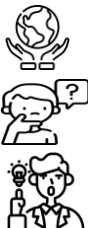
Working Like a Scientist and Working Scientifically

Scientists conduct experiments by setting up fair tests, where they change one variable (something that can be changed, observed or measured) while keeping others the same. They make careful measurements using thermometers to measure temperature. Scientists use models to show how a process works, such as the water cycle.

Careers: water scientist, pharmacist, science teacher

If you want to be a water scientist, you need...

- to **care** about looking after other people and our planet.
- to be **curious** about the natural world around you.
- a strong **understanding** of the water cycle.



Speak Like a Scientist

Previously learned vocabulary:
sensor, temperature, material
New vocabulary:
condensation, evaporation, freeze, melt, boil, solid, liquid, gas

Project Questions

Give an example of a solid, liquid and a gas. How do you know?
What happens to water when it is heated or cooled?
What is the water cycle?
How does temperature affect how an ice block evaporates?

States of Matter

Examples

Solid



Liquid



Gas

