

# Year 4 Science: States of Matter

## Key Question

### How and why are solids, liquids and gases different?

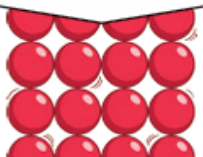
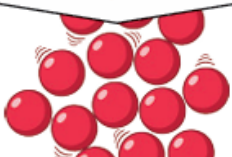

#### Knowledge

- Explore everyday materials and develop simple descriptions, e.g. solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container.
- Observe that some materials change state when they are heated or cooled.
- Compare and group materials together, according to whether they are solids, liquids or gases.
- Recognise how gases are used in everyday life.

#### Skills

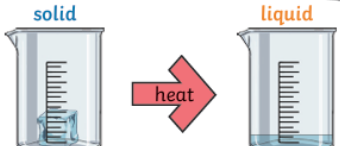
- Ask relevant questions and answer them.
- Set up simple practical enquiries,
- Make systematic and careful observations
- Present data in a variety of ways
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.
- Use straightforward scientific evidence to answer questions or to support their findings.

Key Vocabulary	Definition
Solid	A substance of matter - Firm and stable in shape – not solid or liquid
Liquid	A substance that flows freely but is of constant volume, having a consistency like water or oil.
Gas	A substance of matter which will expand freely to fill a container having no fixed shape.
Temperature	The measurement of heat measured by a thermometer or by touch.
Evaporation	The process of turning from liquid into gas.
Condensation	The process of turning from gas into liquid.
Melt	The process of turning from solid into liquid.
Freeze	The process of turning from liquid into solid.

Key Knowledge		
There are three states of matter.		
<b>Solid</b> 	<b>Liquid</b> 	<b>Gas</b> 
Particles in a <b>solid</b> are close together and cannot move. They can only vibrate.	Particles in a <b>liquid</b> are close together but can move around each other easily.	Particles in a <b>gas</b> are spread out and can move around very quickly in all directions.

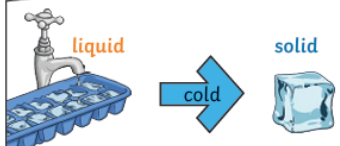
When water and other **liquids** reach a certain temperature, they change state into a **solid** or a **gas**. The temperatures that these changes happen at are called the boiling, **melting** or **freezing** point.

solid      liquid



If a **solid** is heated to its **melting** point, it **melts** and changes to a **liquid**. This is because the particles start to move faster and faster until they are able to move over and around each other.

liquid      solid



When **freezing** occurs, the particles in the **liquid** begin to slow down as they get colder and colder. They can then only move gently on the spot, giving them a **solid** structure.

## Everyday uses for gases

