



# States of Matter

Year 4

## Knowing More, Remembering More

### Remembering previous learning

**What is ice?** When water freezes, it turns to ice.

**What is water?** When ice melts, it turns to water.

## In this unit children will:

- Compare and group materials together, according to whether they are solids, liquids or gases
- 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

## Working Scientifically:

- 4.1 Ask relevant questions and use different types of scientific enquiry to answer them.
- 4.3 Make predictions based on simple scientific knowledge.
- 4.4 Identify what they will change, observe or measure and keep the same.
- 4.5 Set up simple practical enquiries, comparative and fair tests.
- 4.6 Make systematic and careful observations.
- 4.9 Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- 4.10 Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- 4.12 Use straight-forward scientific evidence to answer questions or to support their findings.
- 4.13 Use results to draw simple conclusions.

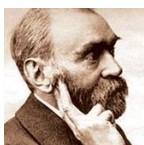
## Key Learning Steps:

1. Explore solids, liquids and gases
2. Think differently - solids, liquids and gases
3. Change states
4. Use equipment
5. Plan - melting experiment
6. Investigate - melting experiment
7. Plan - water cycle
8. Plan - evaporation experiment
9. Investigate - evaporation experiment
10. Evaluate - evaporation experiment

## Key Vocabulary:

- states of matter
- solid
- liquid
- gas
- volume
- pouring solid
- oobleck
- flow
- freezing
- melting
- boiling
- condensation
- evaporation
- condensation
- thermometer
- stopwatch
- beaker
- independent variable
- dependent variable
- controlled variable
- temperature
- melting point
- the water cycle
- precipitation
- atmosphere
- global warming
- water vapour
- petri dish
- observations
- data
- conclusion

## Key Scientists:



### Classic

**Alfred Barnhard Nobel**  
(1833-1896)

Swedish chemist, engineer and inventor of dynamite



### Contemporary

**Spencer Silver** Inventor of non-drying glue used on post-it notes.

### Contemporary

**Jeffrey Karp** Inventor of medical glue used instead of stitches.



## Knowing More, Remembering More

### Knowing more in Y4

**What is a solid?** Solids have a fixed shape and volume. A solid material will keep its shape if it is transferred from one container to another.

**What is a liquid?** Liquids have no fixed shape and will take on the shape of the container they are transferred into. The volume will remain the same.

**What is a gas?** Gases have no fixed shape and no fixed volume. They will spread out and fill any available space.

**What is a pouring solid?** Some solids, such as sand, salt, flour and rice, can be poured but they are still classified as solids.

**Can some materials change state?** Some materials can change state between a solid, a liquid and a gas.

**What is the water cycle?** When water is in constant movement through the different states of matter. Water can be a solid (ice), a liquid (water) or a gas (water vapour).

**What is the process of evaporation?**

The change of state from a liquid to a gas when something is heated.

**What is the process of condensation?**

When a gas changes state to a liquid when it is cooled.

