



1. Can I compare and group materials according to whether they are solids, liquids or gases?

- **Prior Knowledge:** N/A
- **Vocab:** solid, liquid, gas
- Know that materials can be grouped into three states of matter: solids, liquids and gases.
- Know that scientists ask questions to help them classify materials
- Know that solids hold their shape, liquids flow to take the shape of their container and gases spread out to fill the space available.
- Know that materials can be compared and classified based on these properties, (e.g. a rock is a solid, water is a liquid and air is a gas).
- Know that grouping materials helps us to organise and understand their similarities/ differences
- **Gathering, recording, classifying and presenting data in a variety of ways to help in answering question?**
- **Ask relevant questions and use different types of scientific enquiries to answer them**

2. Can I describe the properties of solids, liquids and gases using observations and evidence?

- **Prior Knowledge (last lesson):** compared and grouped materials into solid/liquid/gas
- **Vocab:** shape, flow, space
- Know that solids have a fixed shape and do not flow.
- Know that liquids do not have a fixed shape and will flow to take the shape of their container.
- Know that gases do not have a fixed shape or volume and can spread out to fill a space.
- Know that careful observations help us describe and compare the properties of different states of matter.
- **Making systematic and careful observations**

3. Can I observe and explain how materials change state when they are heated or cooled?

- **Prior Knowledge (last lesson):** described the properties, of solids/liquids/gases
- **Vocab:** melt, freeze, temperature
- Know that materials can change state when they are heated or cooled, (e.g. ice melts into water when heated and water freezes into ice when cooled).
- Know that melting is when a solid changes into a liquid and freezing is when a liquid changes into a solid.
- Know that heating adds energy to a material and cooling removes energy, causing changes of state.
- Know that observing changes helps us understand how materials behave when conditions change.
- **(note for teachers – suggested task:** demonstrate ice melting and water freezing (if possible) or show a video, asking children to observe and describe what changes and why.)
- **Identifying differences, similarities or changes related to simple scientific ideas and processes**

6. Can I investigate how temperature affects the rate of evaporation and report my findings using evidence to draw conclusions?

- **Prior Knowledge (last lesson):** identified the stages of water cycle, evaporation and condensation
- **Vocab:** evaporation, temperature, rate
- Know evaporation is when a liquid changes into a gas; happens quicker at higher temperatures.
- Know that the rate of evaporation means how fast a liquid evaporates.
- Know that temperature is a key factor affecting how quickly evaporation occurs.
- Know that carrying out a fair test and using results helps us to draw conclusions about how evaporation works.
- **(note for teachers – suggested task:** place equal amounts of water in different locations (e.g. sunny spot, shaded area, near a heat source) and ask children to observe and measure how much water remains over time, then compare results and draw conclusions.)
- **Setting up simple practical enquiries, comparative and fair tests**
- **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions**
- **Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions**

5. Can I identify the stages of the water cycle and explain evaporation and condensation?

- **Prior Knowledge (last lesson):** investigated how temperature affects change of state
- **Vocab:** evaporation, condensation, water cycle
- Know that the water cycle describes how water moves around the Earth.
- Know that evaporation is when a liquid changes into a gas when heated.
- Know that condensation is when a gas cools and changes back into a liquid, (e.g. water droplets forming on a cold surface).
- Know that these processes are part of the continuous cycle of water moving between the Earth and the atmosphere.
- **Using straightforward scientific evidence to answer questions or to support their findings**

4. Can I set up an enquiry to investigate how temperature affects changes of state?

- **Prior Knowledge (last lesson):** observed how materials change state when heated/cooled
- **Vocab:** temperature, Degrees Celsius (°C), Heat
- Know that temperature can affect when a material changes state, (e.g. ice melts at a certain temperature and chocolate melts when heated).
- Know that temperature is measured in degrees Celsius (°C) using a thermometer.
- Know that a fair test involves changing one variable (such as temperature) while keeping other conditions the same.
- Know that measuring and recording temperature helps us understand when changes of state occur.
- **(note for teachers – suggested task:** investigate melting chocolate or butter by placing samples in different temperature conditions (e.g. room temperature vs warm water), measure temperature if possible, and observe how quickly the material changes state. Record results in a table.)
- **Setting up simple practical enquiries, comparative and fair tests**
- **Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units**
- **Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables**

States of Matter