**States of Matter**

**NC Statutory Guidance**

Pupils should be taught to:

* 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**

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

* asking relevant questions and using different types of scientific enquiries to answer them
* setting up simple practical enquiries, comparative and fair tests
* making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
* gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
* recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
* reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
* using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
* identifying differences, similarities or changes related to simple scientific ideas and processes
* using straightforward scientific evidence to answer questions or to support their findings.

**Resources**

Twinkl PlanIt to be adapted. Lesson 2 moved to the end.

**Lesson Overview (Statutory in Bold)**

|  |  |  |  |
| --- | --- | --- | --- |
| WALT | Knowledge to be Taught | Skills to be Taught and Investigations | Vocabulary |
| Sort and describe materials. | Solids keep their shape unless a force is applied to them.  Liquids take the shape of the container they are in.  Gases can spread out to completely fill the container or room they are in.  All materials are made of tiny particles that behave differently in different states. | **Compare and group materials together, according to whether they are solids, liquids or gases.** | states of matter  solid  liquid  gas  gaseous  volume  gravity  particles |
| Investigate materials as they change state. | A heated solid melts into a liquid.  A cooled liquid solidifies or freezes into a solid. | Test to see which temperature is best for melting chocolate. Focus on prediction and fair testing.  **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.** | melting  freezing  solidifying  particles  temperature  Celsius |
| Explore how water changes state. | Evaporation is when liquid water turns into a gas called water vapour, or steam.  It happens easily at 100˚C but can happen more slowly at lower temperatures.  Condensation is when water vapour cools and turns into liquid water.  Freezing is when liquid water is cooled below 0˚C and becomes solid ice.  Melting is when ice warms above 0˚C and becomes liquid water. | **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.** | evaporation  water vapour  steam  boiling  condensation  freezing  melting |
| Investigate how water evaporates. | Clothes dry when water evaporates and is removed from the material. | Investigate how temperature affects the amount of time it takes a towel to dry.  Focus on accurate measurement.  **Associate the rate of evaporation with temperature.**  Make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions. | evaporation  temperature. |
| Identify and describe the different stages of the water cycle. | Explain the water cycle. | **Identify the part played by evaporation and condensation in the water cycle.** | evaporation  condensation  precipitation  collection  droplets  absorbed  water cycle |
| Investigate gases and explain their properties. | Carbon Dioxide is a useful gas. It is dissolved into fizzy drinks. | Investigate whether gases weigh anything. Focus on accurate measurement.  Compare and group materials together, according to whether they are solids, liquids or gases. | Carbon Dioxide  Atmosphere  dissolves |