Year 4 Science – States of matter

What we already know

We know that some solid materials can shape when we twist, pull, squash, or bend them. Some materials will not change shape at all. The material changing shape will be dependent on its properties and the force that is applied. Materials can be grouped to include plastic, wood., cardboard, metal, glass and fabric.

Vocabulary

Tier 1:	Tier 2:	Tier 3:
Shape, Pour, Water, Ice, Steam, Cloud	Volume, Solid, Liquid, Gas, Boil, Freeze, Melted, Temperature, Water droplets.	Evaporation, Condensation, Water cycle Water Vapour,

1. Group Solids, Liquids and Gases.

In a solid state, objects hold their shape. Solids like sand and flour can be poured but form a pile rather than a thin layer.
In the liquid state, the material holds the shape of the container it is in. Liquids can be poured.
Gases have particles which are spread out and move in all directions. Some types of gases include oxygen (needed for breathing), carbon dioxide (what we breathe out).



2. Changes of State

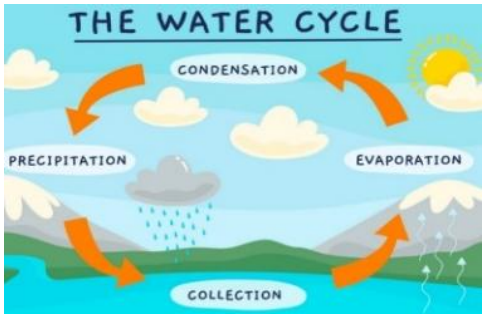
When water is heated, it changes into steam (called water vapour) which is a gas.
When water is cooled it can freeze to become ice.
Water freezes at 0°C and water boils at 100°C
Melting is a change from a solid to a liquid, achieved by heating the solid.
You can heat metal to turn it into a liquid.
Solids and liquids can both freeze.
When a solid is frozen it remains a solid.
When a liquid is frozen it becomes a solid.

3/4: Planning a scientific enquiry and use equipment to make careful observations

Planning: We can use a thermometer to measure temperature changes relating to changes in states of matter.
Using equipment:
A thermometer can be used to measure temperature – the scale is measured in degrees Celsius (°C)
A stopwatch is used to measure time in minutes and seconds.
A beaker is used to measure the volume of water.
Observations:
We will identify what needs to be measured (temperature of water, time taken to observe changes in state)
We know we can use observations to measure and record changes in states of matter.

5. The water cycle

Earth's water is constantly recycled, no new water is every created. The water cycle - when water changes its state when it is being recycled.
Steps of the water cycle:
Step 1: Water evaporates into the air.
Step 2: Water vapour condenses into the clouds.
Step 3: Water falls as precipitation.
Step 4: Water returns to the sea.
Evaporation is the same change as boiling but happens much slower. The higher the temperature, the quicker evaporation happens. Condensing is when water vapour turns back into a liquid.



6/7 To make predictions for, investigate and evaluate an evaporation experiment

Predictions:	Investigate:	Evaluate:
Using our knowledge about the water cycle, we will make predictions on how different temperatures may impact on the rate or ability for water to evaporate.	We will make systematic (hourly) and comparative observations of how the temperature in different locations in the school impacts on the rate or ability for water to evaporate.	We will present and explain our findings using scientific language (solid, gas, evaporate, temperature)