Year 4: States of Matter

Kindness Enjoyment Achievement

<table>
<tr>
<td rowspan="2"><u>Key Concepts:</u>
Matter makes up everything in our planet and in the whole universe. It exists in 3 possible states: solids, liquids and gases. Matter can change states, depending on its temperature.
When matter changes state, the processes have names: freezing, melting, evaporating and condensing.
The water cycle depends on some of these processes.

Identify solids, liquids and gases by the way they behave:
<u>Solids</u> hold their shape and have a fixed volume. They do not have to be hard! Some are granular (e.g sand and sugar). Examples: wood, fabric, glass, flour.
<u>Liquids:</u> do not hold their shape, they take the shape of their container & lie on the bottom of it. Can be poured. Examples: blood, milk, water.
<u>Gases:</u> Do not hold their shape. They will expand to fill the space of the container. They can be squashed. Examples: oxygen, carbon dioxide, helium.
Particle layout in the three states:</td>
<td><u>Types of Enquiry:</u>
<u>Sorting and classifying:</u>
Group materials by whether they are solids, liquids or gases.
<u>Fair/ comparative test:</u>
What affects the rate of evaporation of water from a bowl?
Does seawater evaporate faster than fresh water?
<u>Use of secondary sources:</u>
Research the melting and freezing temperatures of a variety of materials.
How is the weather predicted?
<u>Change over time:</u>
What affects the rate of evaporation of water from a bowl?
How does the mass of an ice cube change over time?
<u>Pattern seeking:</u>
Is there a pattern in how long it takes different sized ice lollies/ ice cubes to melt?</td>
<td><u>Vocabulary:</u>
Matter
Solid, liquid, gas
Changing state
Temperature
Degrees Celsius
Particle
Melting, freezing
Evaporating, condensing
Water vapour
Runoff
Precipitation
Granular
Pour
Volume
Oxygen, carbon dioxide, helium
Surface area</td>
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<td><u>Working scientifically skills:</u>
<u>Questioning:</u>
Answer questions posed by the teacher.</td>
<td><u>How it fits in with the rest of the curriculum:</u>
Y1: Identify and name a variety of everyday materials including wood, metal, plastic, glass, water and rock.</td>
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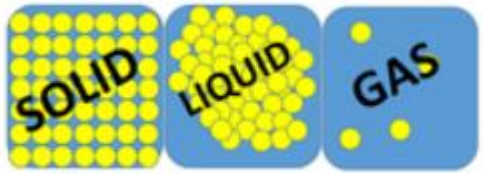
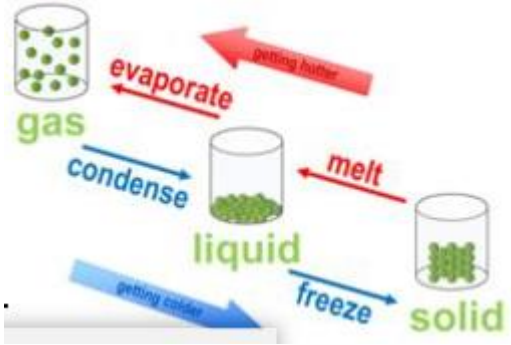
 Some materials change state when they are heated or cooled. Everyday examples of evaporation: washing drying, water boiling, puddles evaporating on a hot day. Everyday examples of condensation: water droplets forming inside windows or on a cold glass  Know that the warmer it is, the faster the rate of evaporation.	Following a scientific experience, ask futher questions which can be answered by extending the same enquiry. <u>Observing:</u> Measure water volume using a measuring jug Use a thermometer Take photos/ draw observational pictures. Observe puddles drying in playground. <u>Testing:</u> Follow their plan to carry out fair test into evaporation and /or melting. Make decisions during the test about whether they need to take repeat readings or adjust the observation period and frequency of observation. <u>Recording:</u> Decide how to record and present evidence. Record observations of eggshells using pictures and/ or photos with written descriptions <u>Concluding:</u> Answer their own questions based on observations and measurements they have taken; answers are consistent with the evidence. Draw conclusions based on the evidence and their own subject knowledge.	Describe the simple physical properties of a variety of everyday materials & group materials on this. Y2: Distinguish between an object and the material from which it is made. Identify & compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how shapes of solid objects made from some materials can be changes by squashing, bending, twisting and stretching. Y5: Compare and group everyday materials on the basis of their properties including their hardness, … & solubility… Know that some materials will dissolve in a liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of gases, solids and liquids to decide how mixtures might be separated, including through sieving, filtering and evaporation. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials and this kind of change is usually not reversible, including changes associated with

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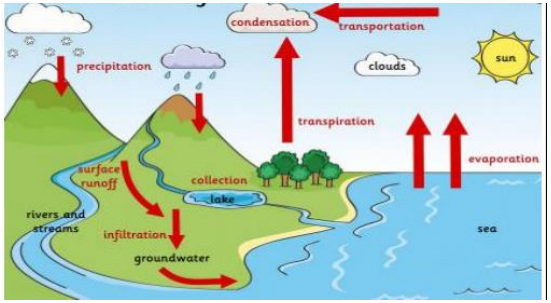
The water cycle uses the processes of evaporation & condensation:  		burning and the action of acid on bicarbonate of soda. **<u>Cross curricular links:</u>** Geography: Water cycle DT: Hydraulics and pneumatics Cooking- melting and freezing Science: Links to sound travelling through different materials