

Uplands Manor Primary School - Science Unit Organiser

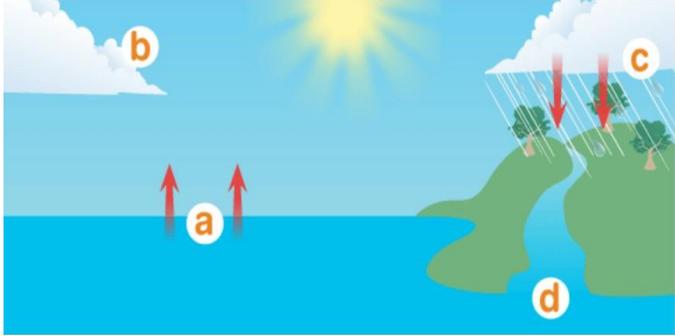
Science Topic:	States of Matter		Year 4	
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What? (Key Vocabulary)	
Spelling	Definition/Sentence
Temperature	The measure of warmth or coldness of an object
Celsius	The common scale in the UK for measuring temperature
Boils	To become so hot (100°C) that water bubbles and then turns into a gas
Container	Something which holds things inside, like a box, jar or tub

Diagrams and Symbols

The Water Cycle

Water on the earth is constantly moving. It is recycled over and over again. This recycling process is called the **water cycle**.



The diagram illustrates the water cycle with four stages labeled a, b, c, and d. Stage 'a' shows water evaporating from the sea into the air. Stage 'b' shows water vapour condensing into clouds. Stage 'c' shows rain falling from the clouds onto the land. Stage 'd' shows rainwater running off the land into the sea.

- a. Water evaporates into the air**
The sun heats up water on land, and in rivers, lakes and seas and turns it into water vapour. The water vapour rises into the air.
- b. Water vapour condenses into clouds**
Water vapour in the air cools down and changes back into tiny drops of liquid water, forming clouds.
- c. Water falls as rain**
The clouds get heavy and water falls back to the earth in the form of rain or snow.
- d. Water returns to the sea**
Rain water runs over the land and collects in lakes or rivers, which take it back to the sea. The cycle starts all over again.

Recommended Experiments	
A minimum of two experiments should take place during this unit of work with one final written outcome linked to the scientific enquiry skills and approaches used.	
	Testing the rate of evaporation by drying various materials
	Experiment with varying melting points of food items (Do healthy foods melt quicker/slower?)
	Experiment to determine if hot or cold water freezes quicker

What? (Key Knowledge)	
Grouping Materials	
Materials fall into four main categories	<ul style="list-style-type: none"> Solids, liquids, gases and plasma (not part of our curriculum)
How to spot each type of material	
Solids	<ul style="list-style-type: none"> Solids stay in one place and can be held Most solids keep their shape - they do not flow like liquids (Some solids like sand or salt can be poured) Solids always take up the same amount of space - they do not spread out like gases
Liquids	<ul style="list-style-type: none"> Liquids can flow or be poured easily - they are not easy to hold Liquids change their shape depending on the container they are in
Gases	<ul style="list-style-type: none"> Gases are often invisible Gases do not keep their shape - they spread out and change their shape and volume to fill up whatever container they are in
Changes of state	
What does changes of state mean?	<ul style="list-style-type: none"> What a material changes from one material type to another, we say 'it has <i>changed state</i>'
What are the changes of state?	

What	Explanation	Name of process	Example
Solid to Liquid	When a solid melts it changes to a liquid.	Melting	When an ice cube melts.
Liquid to Gas	A liquid evaporates into a gas when it is heated.	Evaporation	When water on a roof is warmed up and turns to steam.
Gas to Liquid	When a gas it cooled it condenses into a liquid.	Condensation	When steam from the shower cools on the mirror it turns to water.
Liquid to Solid	When a liquid freezes it turns into a solid.	Freezing	When the water in a pond freezes, it turns to ice.

At what temperature does each happen?	
Boiling	<ul style="list-style-type: none"> Water boils at exactly 100°C (A hot bath is about 40°C)
Melting	Different solids melt at different temperatures: <ul style="list-style-type: none"> Ice melts at 0 degrees Celsius (0°C) (Chocolate melts at about 35°C)
Freezing	Water freezes at 0 degrees Celsius (0°C)
Evaporation and Condensation	Water can evaporate and condense at any temperature. But, the warmer it is the faster the evaporation takes place.

Builds on: learning in Year 3 - Spring 1 - Unit: Rocks	Learning links	Leads to: learning in Year 5 - Spring - Unit: Properties and Changes of Materials
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