


**Year 1 Autumn 2**  
**Materials – Chemistry**

<b>Previous Knowledge and Skills</b> Can you remember your learning?	<b>Curriculum Links</b>
<ul style="list-style-type: none"> <li>about how we use our senses to explore the world around us</li> <li>that objects feel and look different based on the material they are made from (previous learning about the Senses)</li> </ul>	Geography – Castles – what they are made from? Maths – Shape DT – Structures
<b>Important Images</b>	
 <p>wood      metal      plastic      rock      melt      freeze</p>	
<b>Key Vocabulary</b> We want you to remember these words	<b>Working Scientifically</b>
<p><b>Material</b> - what an object is made from  <b>Waterproof</b> - is not affected by water  <b>Properties</b> - what a material is like and how it behaves  <b>Absorbent</b> - able to easily soak up liquid  <b>Transparent</b> - to allow all light to pass through.  <b>Opaque</b> - to have no light able to pass through  <b>Rough</b> - having an uneven surface  <b>Smooth</b> - having an even, flat surface with no lumps or ridges  <b>Solid</b> - substance that holds its shape</p>	<ul style="list-style-type: none"> <li>Identifying and classifying</li> <li>Observing closely, using simple equipment</li> <li>Performing simple tests</li> <li>Gathering and recording data to help in answering questions</li> <li>Using their observations and ideas to suggest answers to questions</li> </ul>
<p><b>Independent variable</b> - what will change  <b>Dependent variable</b> - what will be measured  <b>Controlled variables</b> - what is kept the same</p>	
<b>Key knowledge and skills</b> The 'stuff' we want you to remember	
<ul style="list-style-type: none"> <li>To know that we can distinguish between an object and the material from which it is made</li> <li>That we have a variety of everyday materials around us, including wood, plastic, glass, metal, water and rock</li> <li>That we can compare and group materials based on their properties.</li> <li>That we can use words to describe everyday materials, such as 'smooth', 'rough' or 'bendy'</li> <li>That we are able to work scientifically to test for the properties of different materials</li> </ul>	
<b>Focus question:</b> Which material would be the best for a pair of curtains?	



## Year 2 Autumn 2

### Materials – Chemistry

Previous Knowledge and Skills <i>Can you remember learning that?</i>	Curriculum Links
<ul style="list-style-type: none"> <li>objects are things that you can touch or see</li> <li>objects can be made from a variety of materials</li> <li>some materials that objects are made from (e.g. glass, wood, plastic)</li> <li>some words to describe materials (e.g. shiny, soft, rough absorbent)</li> <li>materials which are natural and which are man-made</li> </ul>	<ul style="list-style-type: none"> <li>- DT – Making hand puppets. Children’s choice of materials based on their properties</li> <li>- Geography – Explorers. Which materials will be best to keep an explorer warm on the journey to the South Pole?</li> </ul>

#### Important Images



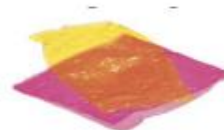
brittle



flexible



transparent



translucent



opaque

Key Vocabulary <i>We want you to remember these words</i>	Working Scientifically
<p><b>Materials</b> - what an object is made from man-made material – a material made by humans</p> <p><b>Properties</b> - This is what a material is like and how it behaves (soft, stretchy, waterproof).</p> <p><b>Natural material</b> – a material that comes from animals, plants or the Earth</p> <p><b>Flexible</b> – can change shape easily</p> <p><b>Translucent</b> - materials that you cannot see through clearly</p> <p><b>Flexible</b> – can change shape easily</p> <p><b>Brittle</b> – easily broken</p> <p><b>Rigid</b> – cannot change shape easily</p> <p><b>Waterproof</b> - does not allow water to pass through it</p>	<ul style="list-style-type: none"> <li>Identifying and classifying</li> <li>Performing simple tests</li> <li>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (non-statutory)</li> <li>Asking simple questions and recognising that they can be answered in different ways</li> <li>Observing closely, using simple equipment</li> <li>Using their observations and ideas to suggest answers to questions</li> <li>Using their observations and ideas to suggest answers to questions</li> </ul>

**Independent variable** - what will change

**Dependent variable** - what will be measured

**Controlled variable** - what is kept the same

#### Key knowledge and skills

*The 'stuff' we want you to remember*

- Materials are used for different purposes based on their properties
- The shape of some materials can be changed when they are stretched, twisted, bent and squashed
- Paper and cardboard are made from wood
- Wood, paper and cardboard come from trees
- Rocks are a natural material
- Bricks are a man-made material

**Focus question:** Which material would be the best for an umbrella?



## Year 3 Autumn 2

### Rocks – Chemistry

Previous Knowledge and Skills <small>Can you remember learning to?</small>	Curriculum Links
<ul style="list-style-type: none"> <li>Rocks are a material</li> <li>They used the terms “rock”, “stone” and “pebble”</li> <li>Describe the simple physical properties of a variety of everyday materials</li> <li>Compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<p>Geography - Settlements - York</p>
Important Images	
<p><b>Rocks</b></p>	
Key Vocabulary <small>We want you to remember these words</small>	Working Scientifically
<p><b>Granite</b> – a hard rock with easy to see crystals</p> <p><b>Pumice</b> – a light rock with small holes</p> <p><b>Sandstone</b> – a pale-coloured rock with grains</p> <p><b>Chalk</b> – a soft white rock</p> <p><b>Marble</b> – a white rock with crystals</p> <p><b>Gneiss</b> – a hard rock with layers</p> <p><b>Texture</b> – what something looks and feels like</p> <p><b>Hardness</b> – a measure of a rock’s resistance to scratching</p> <p><b>Reaction</b> – a change, which can be seen with a temperature change, bubbles or a colour change</p> <p><b>Weathering</b> – the breaking down of rocks over time</p>	<ul style="list-style-type: none"> <li>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Talk about criteria for grouping, sorting and classifying (non-statutory)</li> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> </ul>
Key knowledge and skills <small>The ‘stuff’ we want you to remember</small>	
<ul style="list-style-type: none"> <li>Rocks are natural materials that have different properties</li> <li>Granite, pumice, sandstone, chalk, marble and gneiss are all types of rock</li> <li>Rocks can be grouped in different ways - grains, crystals, layers</li> <li>Some rocks are light and some are heavy, some rocks are hard</li> <li>Some rocks react with acid</li> <li>Some rocks are brittle</li> <li>Some rocks float and some sink</li> <li>Rocks have different textures and appearances</li> <li>Rocks change over time</li> </ul>	
Focus question: How can rocks be identified and grouped based on their properties?	

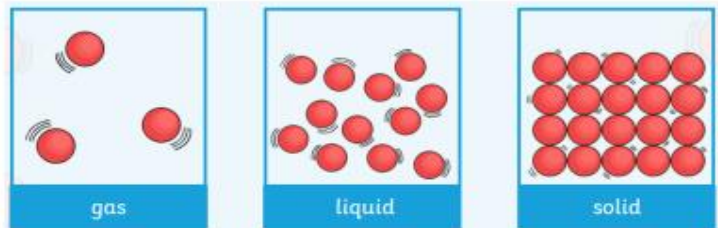
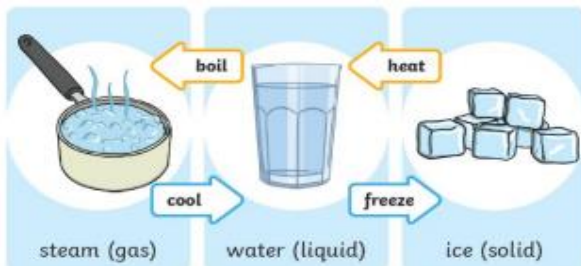


## Year 4 Autumn 2

### States of Matter – Chemistry

Previous Knowledge and Skills <i>Can you remember learning to?</i>	Curriculum Links
<ul style="list-style-type: none"> <li>• identify and name a variety of everyday materials</li> <li>• describe the simple physical properties of a variety of everyday materials</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties</li> <li>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• recognise that soils are made from rocks and organic matter</li> </ul>	<ul style="list-style-type: none"> <li>- Textiles – Money containers – finding the correct properties for the material</li> <li>- Maths – Area</li> </ul>

#### Important Images



Key Vocabulary <i>We want you to remember these words</i>	Working Scientifically
<p><b>Solid</b> – a state of matter with a fixed shape and a fixed volume</p> <p><b>Liquid</b> – a state of matter with no fixed shape but a fixed volume</p> <p><b>Gas</b> – a state of matter with no fixed shape and no fixed volume</p> <p><b>States of matter</b> – the different forms that materials can take</p> <p><b>Pouring solid</b> – a solid that can be poured like a liquid</p> <p><b>Melting</b> - changing from solid to liquid caused by heating</p> <p><b>Freezing</b> - changing from liquid to solid caused by cooling</p> <p><b>Boiling</b> - changing from liquid to gas when the liquid is heated to a specific temperature known as its boiling point</p> <p><b>Evaporation</b> – the change from liquid to gas.</p> <p><b>Condensation</b> – the change from gas to liquid through cooling</p> <p><b>Water cycle</b> - the processes which recycle and move water around Earth</p>	<ul style="list-style-type: none"> <li>• Identifying differences, similarities or changes related to simple scientific ideas</li> <li>• Asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Setting up simple practical enquiries, comparative and fair tests</li> <li>• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• Identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> </ul>

#### Key knowledge and skills

*The 'stuff' we want you to remember*

- Know the properties of solids, liquids and gases
- Compare and group materials together, according to whether they are solids, liquids or gases
- Understand how materials change state between a solid, liquid and gas
- Use a thermometer and a stopwatch accurately
- Understand how temperature affects the speed of melting
- Identify the part played by evaporation and condensation in the water cycle

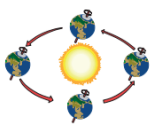


**Focus question:** How does the temperature of the water affect the time it takes for ice to melt?





**Year 5 Autumn 2**

**Space - Physics**

Previous Knowledge and Skills Can you remember learning to?	Curriculum Links
<ul style="list-style-type: none"> <li>It is important to note that children have not studied space and the Solar System before. As a result, they may have a limited understanding of the key terms and what makes up the Solar System.</li> <li>However in Year 2 the children study Mae Jemison and her role with the NASA space program</li> </ul>	<ul style="list-style-type: none"> <li>Geography – Maps – places on planet Earth</li> </ul>
Important Images	
	
Earth's orbit around the Sun	Phases of the Moon
	
Sun and the planets of the Solar System	
Key Vocabulary We want you to remember these words	Working Scientifically
<p><b>Solar System</b> – the Sun and the other bodies that orbit it</p> <p><b>Planets</b> – a roughly spherical object which orbits a star</p> <p><b>Orbit</b> – the path an object takes around another object because of gravity</p> <p><b>Sun</b> – the star at the centre of our Solar System</p> <p><b>Gravity</b> – a non-contact force caused by objects with mass pulling each other</p> <p><b>Heliocentric model</b> – a model that puts the Sun at the centre of the Solar System</p> <p><b>Geocentric model</b> – a model that puts Earth at the centre of the Solar System</p> <p><b>Axis</b> – an imaginary line which something rotates around</p> <p><b>Rotate</b> – to spin around an axis</p> <p><b>Moon</b> – a natural satellite that orbits Earth</p> <p><b>Satellite</b> – an object that orbits a planet or a star</p>	<ul style="list-style-type: none"> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments</li> <li>Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time (non-statutory)</li> <li>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>
Key knowledge and skills The 'stuff' we want you to remember	
<ul style="list-style-type: none"> <li>The Earth...                             <ul style="list-style-type: none"> <li>takes about 365 days, or one year, to complete one full orbit of the Sun</li> <li>rotates once around its axis in a 24-hour period, causing day and night</li> <li>is the only planet known to support life and has four seasons because its axis is tilted</li> </ul> </li> <li>The Planets...                             <ul style="list-style-type: none"> <li>take different amounts of time to complete a full orbit around the Sun</li> <li>There are eight planets that orbit the Sun, Pluto is classified as a dwarf planet</li> </ul> </li> <li>The Sun...                             <ul style="list-style-type: none"> <li>is approximately spherical</li> <li>is a star which releases heat and light and is the largest object at the centre of the Solar System</li> </ul> </li> <li>The Moon...                             <ul style="list-style-type: none"> <li>takes approximately 27 days to orbit Earth and stays in orbit due to the Earth's gravity</li> <li>is not a light source: it reflects the Sun</li> </ul> </li> </ul>	
Focus question: How have ideas about the Solar System changed over time?	



## Year 6 Autumn 2

### Electricity – Physics

Previous Knowledge and Skills	Curriculum Links
Can you remember learning to?	
<ul style="list-style-type: none"> <li>identify common appliances that run on electricity</li> <li>construct a simple series electrical circuit, identifying and naming its basic parts</li> <li>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>	- Maths – Measurement
Important Images	
<p>components</p> <p>cell      bulb      buzzer      switch (closed)      battery      switch (open)</p>	<p>circuit</p>
Key Vocabulary	Working Scientifically
We want you to remember these words	
<p><b>Series circuit</b> - a circuit where all the components are connected in one single loop</p> <p><b>Voltage</b> - causes the current to flow</p> <p><b>Current</b> - the flow of electricity in a circuit</p> <p><b>Complete circuit</b> - a circuit that does not have a break in it</p> <p><b>Incomplete circuit</b> - a circuit that has a break in it</p> <p><b>Repeatability</b> – the likelihood of getting similar results if the experiment is carried out again</p> <p><b>Accuracy</b> – how close a measurement is to the true value</p> <p><b>Evaluate</b> – to consider the quality of data or suggest improvements to the method</p>	<ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Using test results to make predictions to set up further comparative and fair tests</li> </ul>
Key knowledge and skills	
The 'stuff' we want you to remember	
<ul style="list-style-type: none"> <li>A series circuit is one in which all the components are connected in one continuous loop</li> <li>A series circuit has a cell and wires, plus components such as a bulb, a buzzer and a switch</li> <li>Each component in a circuit diagram is represented by a circuit symbol</li> <li>Current is the flow of electricity in a circuit</li> <li>Voltage causes the current to flow</li> <li>For a circuit to be complete, all the components including a cell, must be connected by wires and the switch must be closed</li> <li>An incomplete circuit may have a break in the wires, a switch may be open or the cell may be in the holder the wrong way</li> <li>The current does not flow at all in an incomplete circuit</li> <li>The more components there are in a circuit, the dimmer the bulbs and the quieter the buzzers</li> <li>The more components there are in a circuit, the more difficult it is for the current to flow</li> </ul>	
Focus question: How does the voltage in a circuit affect the loudness of a buzzer?	

