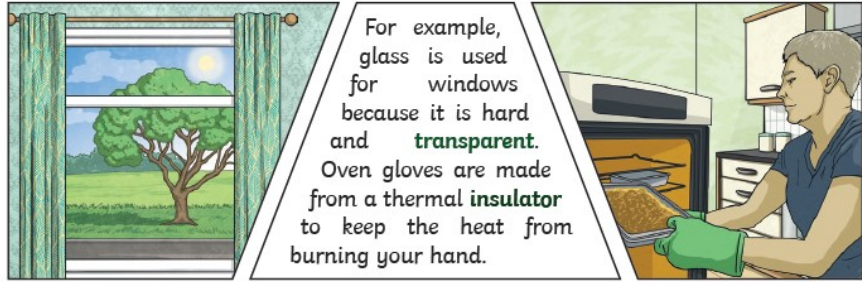























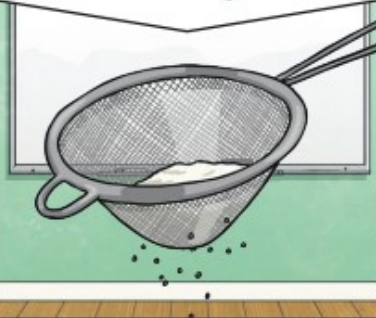

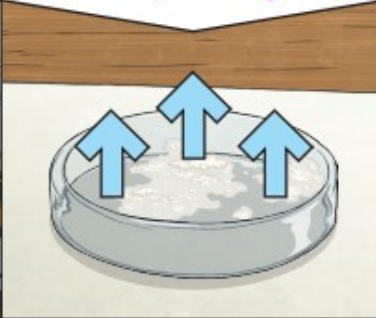
## Year 5/6 Knowledge Organiser – Properties and changes of materials

What should I already know?	Diagrams	What will I know by the end of the unit?																																					
<p>A variety of everyday materials. The physical properties of a variety of everyday materials. How materials are suitably used based on their properties.</p>	<p><b>Key Knowledge</b></p> <p>Different <b>materials</b> are used for particular jobs based on their properties: <b>electrical conductivity</b>, flexibility, hardness, insulators, magnetism, solubility, <b>thermal conductivity</b> &amp; transparency</p>	<p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>																																					
<b>Key vocabulary</b>																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>solid</b></td> <td>having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas</td> </tr> <tr> <td><b>transparent</b></td> <td>If an object is transparent, you can see through it</td> </tr> <tr> <td><b>soluble</b></td> <td>able to be dissolved.</td> </tr> <tr> <td><b>dissolves</b></td> <td>when a substance is mixed with a liquid</td> </tr> <tr> <td><b>conductor</b></td> <td>a substance that heat or electricity can pass through or along</td> </tr> <tr> <td><b>thermal</b></td> <td>relating to or caused by heat or by changes in temperature</td> </tr> <tr> <td><b>filtering</b></td> <td>a device used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other material with tiny holes in it.</td> </tr> <tr> <td><b>evaporation</b></td> <td>to turn from liquid into gas; pass away in the form of vapour.</td> </tr> <tr> <td><b>condensation</b></td> <td>small drops of water which form when water vapour or steam touches a cold surface, such as a window</td> </tr> <tr> <td><b>irreversible</b></td> <td>impossible to reverse, turn back, or change.</td> </tr> </table>	<b>solid</b>	having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas	<b>transparent</b>	If an object is transparent, you can see through it	<b>soluble</b>	able to be dissolved.	<b>dissolves</b>	when a substance is mixed with a liquid	<b>conductor</b>	a substance that heat or electricity can pass through or along	<b>thermal</b>	relating to or caused by heat or by changes in temperature	<b>filtering</b>	a device used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other material with tiny holes in it.	<b>evaporation</b>	to turn from liquid into gas; pass away in the form of vapour.	<b>condensation</b>	small drops of water which form when water vapour or steam touches a cold surface, such as a window	<b>irreversible</b>	impossible to reverse, turn back, or change.	<div style="border: 1px solid black; padding: 10px; margin-bottom: 10px;">  <p style="text-align: center;">For example, glass is used for windows because it is hard and <b>transparent</b>. Oven gloves are made from a thermal <b>insulator</b> to keep the heat from burning your hand.</p> </div> <p style="text-align: center; color: #00aaff;"><b>Materials can be grouped based on their properties using more complex vocabulary.</b></p> <table style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;"><b>Magnetic</b></td> <td style="width: 33%;"><b>Transparent</b></td> <td style="width: 33%;"><b>Permeable</b></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td><b>Soluble</b></td> <td><b>Insoluble</b></td> <td><b>Impermeable</b></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td><b>Flexible</b></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	<b>Magnetic</b>	<b>Transparent</b>	<b>Permeable</b>				<b>Soluble</b>	<b>Insoluble</b>	<b>Impermeable</b>						<b>Flexible</b>			
<b>solid</b>	having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas																																						
<b>transparent</b>	If an object is transparent, you can see through it																																						
<b>soluble</b>	able to be dissolved.																																						
<b>dissolves</b>	when a substance is mixed with a liquid																																						
<b>conductor</b>	a substance that heat or electricity can pass through or along																																						
<b>thermal</b>	relating to or caused by heat or by changes in temperature																																						
<b>filtering</b>	a device used to remove dirt or other solids from liquids or gases. A filter can be made of paper, charcoal, or other material with tiny holes in it.																																						
<b>evaporation</b>	to turn from liquid into gas; pass away in the form of vapour.																																						
<b>condensation</b>	small drops of water which form when water vapour or steam touches a cold surface, such as a window																																						
<b>irreversible</b>	impossible to reverse, turn back, or change.																																						
<b>Magnetic</b>	<b>Transparent</b>	<b>Permeable</b>																																					
																																							
<b>Soluble</b>	<b>Insoluble</b>	<b>Impermeable</b>																																					
																																							
		<b>Flexible</b>																																					
																																							

Diagrams

Key Knowledge

Reversible changes, such as mixing and dissolving **solids** and **liquids** together, can be reversed by:

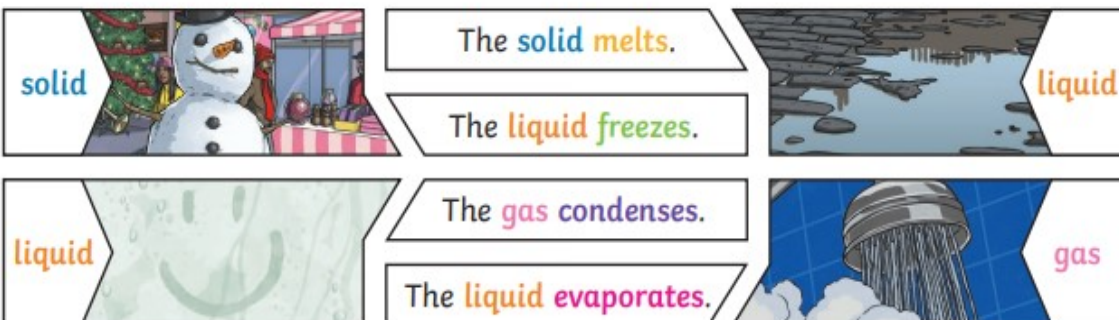
Sieving	Filtering	Evaporating
		
Smaller <b>materials</b> are able to fall through the holes in the sieve, separating them from larger particles.	The <b>solid</b> particles will get caught in the filter paper but the <b>liquid</b> will be able to get through.	The <b>liquid</b> changes into a <b>gas</b> , leaving the <b>solid</b> particles behind.

What are thermal insulators and conductors?

- Materials which are good thermal conductors allow heat to move through them easily.
- Thermal conductors are used to make items that require heat to travel through them easily, such as a saucepan which requires heat to travel through to cook food.
- Thermal insulators do not let heat travel through them easily.
- Examples of thermal insulators include woollen clothes and flasks for hot drinks.

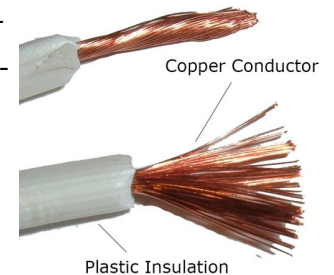


Changes of State



What are electrical insulators and conductors?

- **Electrical conductors** allow electricity to pass through them easily while electrical insulators do not.
- **Electrical insulators** have a high resistance which means that it is hard for electricity to pass through these objects.

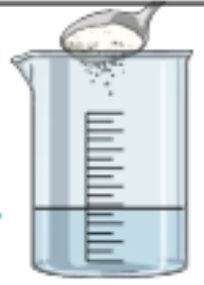


Diagrams

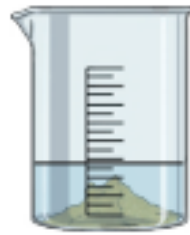
Dissolving

A solution is made when **solid** particles are mixed with **liquid** particles. **Materials** that will dissolve are known as soluble. **Materials** that won't dissolve are known as insoluble. A suspension is when the particles don't dissolve.

Sugar is a soluble **material**.



Sand is an insoluble **material**.



Irreversible Changes

Often result in a new product being made from the old material.

For example **burning wood produces ash**



Topic - Properties and changes of materials

<b>Question 1 - Thermal insulators...(tick two)</b>	<b>Start of unit</b>	<b>End of unit</b>	<b>Question 4 -When solid particles mix with the particles of a liquid, this is called...</b>	<b>Start of unit</b>	<b>End of unit</b>
<b>A. Do not allow heat to pass through easily</b>			<b>A. Evaporation</b>		
<b>B. Allow heat to pass through easily</b>			<b>B. Filtering</b>		
<b>C. Keep heat contained and keep things warm</b>			<b>C. Dissolving</b>		
<b>D. Do not keep heat contained and allow things to cool</b>			<b>D. Sieving</b>		
<b>Question 2—Examples of electrical conductors are...(tick all that apply)</b>	<b>Start of unit</b>	<b>End of unit</b>	<b>Question 5 - A synonym for the word ‘permeable’ is...</b>	<b>Start of unit</b>	<b>End of unit</b>
<b>A. Copper</b>			<b>A. Waterproof</b>		
<b>B. Plastic</b>			<b>B. Magnetic</b>		
<b>C. Wood</b>			<b>C. Absorbent</b>		
<b>D. Iron</b>			<b>D. Trnsparent</b>		
<b>Question 3 - Materials that dissolve are:</b>	<b>Start of unit</b>	<b>End of unit</b>	<b>Question 6 - Match these changes to the scientific name for the process.</b>	<b>Start of unit</b>	<b>End of unit</b>
<b>A. A solution</b>			<b>Ice turns to water</b>	<b>condensation</b>	
<b>B. Soluble</b>			<b>Water turns to water vapour</b>	<b>melting</b>	
<b>C. Insoluble</b>			<b>Water vapour turns to water</b>	<b>evaporation</b>	
<b>D. All of the above</b>					