



| What I should already know. | | Vocabulary | | | |
|---|---|--|---|--|--|
| <ul style="list-style-type: none"> A variety of everyday materials including wood, plastic, glass, metal, water and rock. The physical properties of a variety of everyday materials (including those that are transparent) and to compare and group materials on the basis of these properties. How materials are suitably used based on their properties. How magnets and electrical circuits work. Some materials which are magnetic. How shape of solid objects can be changed by squashing, bending, twisting and stretching. Materials that are solid, liquid and gases and their particle structure. Some materials change state when they are heated or cooled and the temperature at which this happens. The roles of melting, evaporation and condensation in the water cycle and the role temperature has on the rate of evaporation. Some rocks are permeable. | | circuit | a complete route which an electrical current can flow around | | |
| | | condensation | small drops of water which form when water vapour or steam touches a cold surface, such as a window | | |
| | | conductor | a substance that heat or electricity can pass through or along | | |
| | | dissolves | when a substance is mixed with a liquid and the substance disappears | | |
| | | electricity | a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices | | |
| | | evaporation | to turn from liquid into gas; pass away in the form of vapour | | |
| | | filtering | 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. | | |
| | | flexible | an object or material can be bent easily without breaking | | |
| | | gas | a form of matter that is neither liquid or solid . A gas rapidly spreads out when it is warmed and contracts when it is cooled. | | |
| | | insoluble | impossible to dissolve , esp. in a given liquid | | |
| insulator | a non-conductor of electricity or heat | | | | |
| irreversible | impossible to reverse, turn back, or change | | | | |
| liquid | in a form that flows easily and is neither a gas or solid | | | | |
| <p>What I will know by the end of the unit.</p> <p>How to group materials based on their properties using more complex vocabulary.</p> | | magnetic | having to do with magnets and the way they work | | |
| <p>What are thermal insulators and conductors?</p> <ul style="list-style-type: none"> Materials which are good thermal conductors allow heat to move through 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. | | melting | to change from a solid to a liquid state through heat or pressure | | |
| | | particles | tiny amount, or small piece | | |
| | | permeable | of a substance, being such that gas or liquid can pass through it | | |
| | | process | a series of actions used to produce something to reach a goal | | |
| | | properties | the ways in which an object behaves | | |
| | | rate | the speed in which something happens | | |
| | | resistance | the opposing power of one force against another | | |
| | | reversible | able to turn or change back | | |
| | | solid | having a firm shape or form that can be measured in length, width and height; not like a liquid or a gas | | |
| | | soluble | able to be dissolved | | |
| <p>What are electrical insulators and conductors?</p> <ul style="list-style-type: none"> 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. | | solution | a mixture that contains two or more substances combined easily | | |
| | | state | the structure or condition of something | | |
| | | temperature | a measure of how hot or cold something is | | |
| | | thermal | relating to or caused by heat or by changes in temperature | | |
| | | transparent | if an object is transparent , you can see through it | | |
| | | variable | something that can change or that has no fixed value | | |
| | | water cycle | the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation | | |
| | | <p>What is dissolving?</p> <ul style="list-style-type: none"> When the particles of a solid mix with the particles of a liquid, this is called dissolving. The result is a solution. Materials that dissolve are soluble. Materials that do not dissolve are insoluble. | | Investigate | |
| | | <p>Can materials be separated after they have been mixed?</p> <ul style="list-style-type: none"> Some materials can be separated after they have been mixed based on their properties – this is called a reversible change. Some methods of separation include the use of a magnet, a filter (for insoluble materials), a sieve (based on the size of the solids) and evaporation. When a mixture cannot be separated back into the original components, this is called an irreversible change. Examples of this include when materials burn or mixing bicarbonate of soda with vinegar. | | <ul style="list-style-type: none"> Find the best material to stop an ice cube from melting. Remember to keep it a fair test by using the same number of ice cubes, or same size and thickness material. Place the same amount of a hot liquid in a thermal insulator and conductor. Measure the temperature over time and plot these on the same line graph. Use the line graph to ask and answer questions. Find out if thermal conductors also make good electrical conductors. Explain the differences between dissolving and melting. Investigate which materials are soluble and insoluble. Design an experiment that investigates dissolving – consider which variables you could change including: size of beaker, amount of liquid, number of stirs, size of solid, temperature of solid (remember that for a fair test all other variables must remain the same). Create a variety of mixtures using materials such as salt, sand, water, paper clips and rice and use a variety of methods to separate them. Observe and compare the changes that take place when cakes are baked or bicarbonate of soda mixes with vinegar. | |



| Question 1: Thermal insulators...(tick two) | Start of unit: | End of unit: |
|---|----------------|--------------|
| do not allow heat to pass through easily | | |
| allow heat to pass through easily | | |
| keep heat contained and keep things warm | | |
| do not keep heat contained and allow things to cool | | |

| Question 7: Describe an efficient way of separating paper clips from rice and explain why you chose this method. | Start of unit: | End of unit: |
|--|----------------|--------------|
| | | |

| Question 2: Examples of electrical conductors are...(tick all that apply) | Start of unit: | End of unit: |
|---|----------------|--------------|
| copper | | |
| plastic | | |
| wood | | |
| iron | | |
| rubber | | |

| Question 8: You conduct an experiment to investigate if some solids dissolve quicker than others. Name one thing you will do to make the test fair. | Start of unit: | End of unit: |
|---|----------------|--------------|
| | | |

| Question 3: Materials that dissolve are: | Start of unit: | End of unit: |
|--|----------------|--------------|
| insoluble | | |
| soluble | | |
| a solution | | |

| Question 9: Match these mixtures to the most efficient methods of separation. | Start of unit: | End of unit: | | | | | | | | | |
|--|----------------|--------------|-----------|----------------|--|---------|----------------|--|-------------|--|--|
| <table border="0"> <tr> <td style="border: 1px solid black; padding: 5px;">salt and water</td> <td style="padding: 10px;"></td> <td style="border: 1px solid black; padding: 5px;">filtering</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">rice and water</td> <td style="padding: 10px;"></td> <td style="border: 1px solid black; padding: 5px;">sieving</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">sand and water</td> <td style="padding: 10px;"></td> <td style="border: 1px solid black; padding: 5px;">evaporating</td> </tr> </table> | salt and water | | filtering | rice and water | | sieving | sand and water | | evaporating | | |
| salt and water | | filtering | | | | | | | | | |
| rice and water | | sieving | | | | | | | | | |
| sand and water | | evaporating | | | | | | | | | |

| Question 4: When solid particles mix with the particles of a liquid, this is called... | Start of unit: | End of unit: |
|--|----------------|--------------|
| evaporation | | |
| filtering | | |
| dissolving | | |
| sieving | | |

| Question 10: Write an 'R' or an 'I' to indicate if these are examples of reversible or irreversible changes. | Start of unit: | End of unit: |
|--|----------------|--------------|
| frying an egg | | |
| mixing paper clips and sand | | |
| mixing sugar and water | | |
| baking a cake | | |
| mixing flour and water | | |
| mixing coins and flour | | |
| mixing bicarbonate of soda and vinegar | | |
| mixing oil and water | | |

| Question 5: A synonym for the word 'permeable' is... | Start of unit: | End of unit: |
|--|----------------|--------------|
| waterproof | | |
| absorbent | | |
| magnetic | | |
| transparent | | |

| Question 6: Match these changes to the scientific name for the process. | Start of unit: | End of unit: | | | | | | |
|--|--------------------|--------------|-----------------------------|-------------|-----------------------------|---------|--|--|
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