













What should I already know?

- 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 shapes of solid objects can be changed by squashing, bending, twisting and stretching.
- **Materials** that are **solids**, **liquids** 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**.

What will I know by the end of the unit?

| | |
|---|--|
| How to group materials based on their properties using more complex vocabulary. |  magnetic  transparent  flexible |
| What are thermal insulators and conductors ? |  permeable  soluble  insoluble |
| What are electrical insulators and conductors ? | <ul style="list-style-type: none"> • 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.  thermal insulator  thermal conductor |
| What is dissolving ? | <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.  dissolving  solution  soluble  insoluble |
| Can materials be separated after they have been mixed? | <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. |

Vocabulary

| | |
|--------------|---|
| circuit | a complete route which an electric 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 nor 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 solid nor a gas . |
| magnetic | having to do with magnets and the way they work |
| melting | to change from a solid to a liquid state through heat or pressure |
| particles | a 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 or reach a goal. |
| properties | the ways in which an object behaves |
| rate | the speed with 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 . |
| solution | a mixture that contains two or more substances combined evenly |
| 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. |

Investigate!

- 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 difference 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.