Knowledge is Power…

IVINGTON CE PRIMARY AND PRE-SCHOOL KNOWLEDGE ORGANISER

Reaching together… stand firm in your faith, be courageous and strong - 1 Corinthians 16:13

SUBJECT: Science	YEAR: A	TERM: Autumn 2/Spring 1	YEAR GROUP: 6

PROPERTIES AND CHANGES OF MATERIALS

What should I already know?

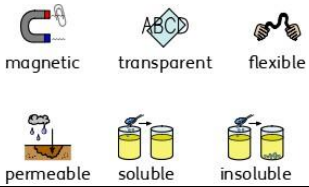
- A variety of everyday materials including wood, plastic, glass, metal, water and rock.
- The physical properties of a variety of everyday materials (including those that are transparent) and to compare and group materials on the basis of these properties
- How materials are suitably used based on their 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.

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 in used for heating and lighting, and to provide power for devices
evaporation	to turn from liquid into gas; pass away in the

What will I know by the end of the unit?

How to group materials based on their properties using more complex vocabulary.



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 easi- ly, 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.

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.

What is dissolving?

- 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.

	form of vapour.		• Materials that do not dissolve are insoluble. • dissolving  solution soluble insoluble
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.	Can materials be separated after they have been mixed?	• 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.
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	Investigation	• 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.
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		
properties	the ways in which an object behaves		
rate	the speed with which something happens		
resistance	the opposing power of one force against another.		
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		
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		