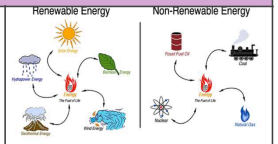
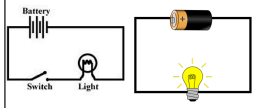
Year 4 Science Knowledge Organiser - Electricity

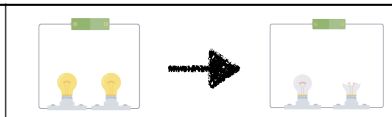
Knowledge: Electricity

Where does electricity come from?	1. Electricity is generated using energy from natural sources such as: the Sun, oil, water, coal & wind. 2. These can also be called fuel sources. 3. Some fuels are more friendly to the environment than others	
How does a circuit work?		1. A complete circuit is a loop that allows electrical current to flow through wires. 2. A circuit contains a battery (cell), wires and an appliance that requires electricity to work (such as a bulb, motor or buzzer). 3. The electrical current flows through the wires from the battery (cell) to the bulb, motor or buzzer. 4. A switch can break or reconnect a circuit. 5. A switch controls the flow of the electrical current around the circuit. When the switch is off, the current cannot flow. This is not the same as an incomplete circuit.

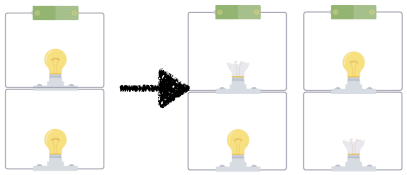
Knowledge: Types of Circuits

There are two types of circuit we can make, called series and parallel.

1. Series circuits are described as simple. Fairy lights are used as an example. If there is a break in a series circuit results then there is no flow of electricity.



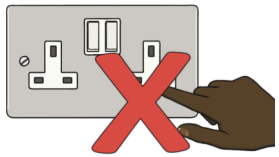
2. Parallel circuits are like a go-kart track with two routes. A break in a parallel circuit only results in components on that branch not working. Possibly, the most familiar use of parallel circuits is found in lighting fixtures: if one bulb burns out, the other bulbs in the fixture continue to operate.



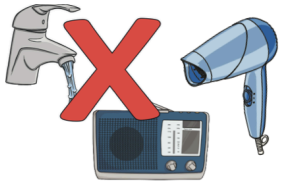
Knowledge: Dangers of Electricity

Don't pull wires

Don't climb trees near power lines



Don't put your fingers in sockets

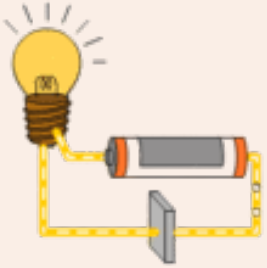


Don't use radios or hair dryers near water

Vocabulary

1. Battery	Small devices that provide the power for electrical items such as torches.
2. Cell	A synonym for battery.
3. Circuit	A complete route which an electric current can flow around.
4. Conductor	A substance that heat or electricity can pass through or along.
5. Current	A flow of electricity through a wire or circuit .
6. Electricity	A form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices.
7. Fuel	A substance such as coal, oil, or petrol that is burned to provide heat or power.
8. Insulator	A non-conductor of electricity or heat.
9. Switch	A small control for an electrical device which you use to turn the device on or off.

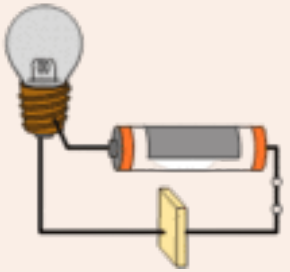
Electrical Conductor



Conductor allows the energy to pass through it.

VS

Electrical Insulator



Insulator does not allows the energy to pass through it.

Year 4 Science Skills Knowledge Organiser - Electricity

Key Concepts and what they mean

1. Physics	Physics is the study of energy and matter in space and time and how they are related to each other.
2. Chemistry	Chemistry deals with the properties of substances, the transformations they undergo, and the energy that is released or absorbed during these processes. For example, when plants use sunlight to produce energy (or food for itself).
3. Data Collection	Data collection is the process of gathering and measuring information to answer a question. For example, recording living and non living things to investigate whether numbers change depending on the weather.
4. Cause and effect	Cause and effect is the relationship between events or things, where one is the result of the other or others. For example, the weather gets colder and there is less food around, so animals hibernate.
5. Envrionmental	Environmental relates to the environment around us at Old Fletton.

Creating a Data Table

Data tables help you keep information organised. If you're collecting data from an experiment or scientific research, saving it in a table will make it easier to look up later.

1) Name your table - make sure the title relates to the data you will put in your table
2) Decide how many columns and rows you need.
3) Draw the table. Using a ruler, draw a large box and making the necessary number of columns and rows.
4) Label all your columns.
5) Record the data from your experiment or research in the appropriate columns.

1)

4) Time taken for sweet to dissolve in different amounts of acid.

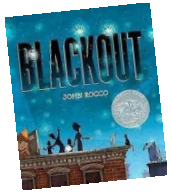
Amount of acid	Time to dissolve
5ml	93s
10ml	84s
15ml	32s
20ml	12s

2)

5)

Literacy links to this topic

Stories that relate to the topic of 'Electricity' are:



Blackout by John Rocco
Goodnight Mr Tom by Michelle Magorian

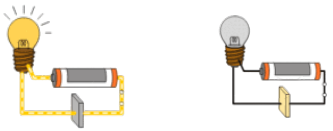
These stories help you to gain a greater understanding of electricity and may spark some questions that you might want to ask in your next science lesson!

Experiment Steps to Success - Improvements

Once you have done your experiment you need to think about any improvements that you can make.

It might that you would like to test the variable using different material, such as using a digital rather than mercury thermometer.

You might wish to change the equipment, such as using more batteries when testing a conducting or insulating material because it will be easier to see whether the bulb is lit up or not.

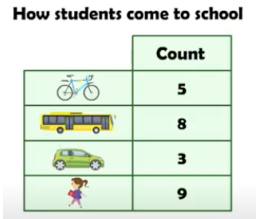


Finally, you may want to test more options, such testing 3 different types of metal, 3 different types of wood and 3 different types of plastic rather than one of each.

Creating a Bar Chart

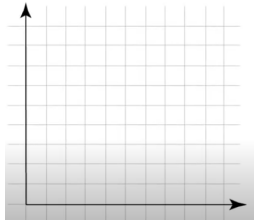
Step 1

Create a data table with your results.



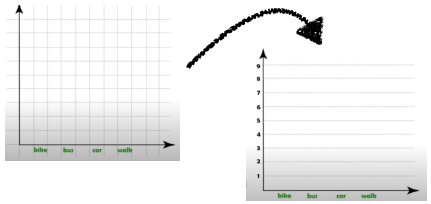
Step 2

Draw two lines perpendicular to each other. The horizontal line (left to right) is the x axis and vertical line (up) is the y axis



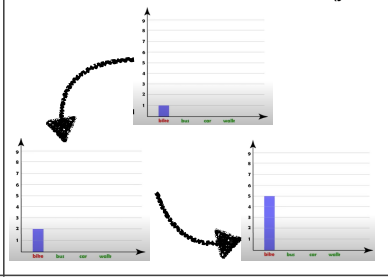
Step 3

Along the horizontal (x axis), choose uniformed width bars and write the name of the option or answer. Along the vertical (y axis), choose a suitable scale.



Step 4

Draw each bar, going up until you reach the correct number on the vertical (y axis).



Step 5

Draw all the bars on the graph.
Add the labels to the bar chart, y and x axis.