Electricity

Overview of unit

The children will develop more of an understanding of circuits. They will build and explore circuits and their components, discussing why some circuits will work and others won't. They will build circuits from diagrams and draw their own. Children will investigate how the number of components and batteries affects the voltage in a circuit and so affects how brightly a bulb will shine. They will use their knowledge of circuit symbols to draw and discuss different circuits and suggest which may potentially overload the components, breaking them. After investigating how the number of batteries and bulbs in a circuit affect bulb brightness, they will plan and conduct an investigation to see how different wires can affect the brightness of a bulb. The children will look at improving an existing investigation as well as discussing anomalous results in experiments and how we can spot them. In this final lesson the children will put their knowledge and understanding of electricity and circuits to the test as they make their own burglar alarms or other devices.

Key Questions

Can you give an example of where static electricity might be generated?
Do you know what the main components of a circuit are?
Do you know why symbols are used to draw circuit diagrams?
What happens to the brightness of a bulb or the speed of a motor when you add more of these components?
What happens to the brightness of a bulb in a circuit when you alter the wires?
Can you suggest questions to investigate, decide what to do and what equipment to use to test the question?
How can you make fair comparisons and draw conclusions from your results?
Can you use their knowledge of circuits and components such as switches to create more complex circuits?

Key Vocabulary

Electricity alternating current, direct current, battery, cell.
circuit A path that an electrical current can flow around
symbol A visual picture that stands for something else.
cell/battery A device that stores chemical energy until it is needed. A cell is a single unit. A battery is a collection of cells.
current The flow of electrons, measured in amps.
amps How electric current is measured.
voltage The force that makes the electric current move through the wires. The greater the voltage, the more current will flow.
resistance The difficulty that the electric current has when flowing around a circuit.
electrons Very small particles that travel around an electrical circuit.
electricity The flow of an electric current through a material, e.g. from a power source through wires to an appliance.
battery A device that stores electrical energy as a chemical. Two or more cells joined together form a battery.
Bulb, wires, switch, motor, buzzer other components of a electrical circuit

Key Knowledge and Understanding:

To recap what electricity is and investigate static electricity.
To recap our knowledge and understanding of circuits.
To be able to recognise and use conventional symbols for circuits.
To investigate ways in which the brightness of a bulb or speed of a motor is changed.
To be able to plan, carry out and evaluate an experiment to see how changing the wire in a circuit affects the brightness of a bulb.
To create a simple device using a circuit.
To plan an investigation based on the results of a previous investigation;
To decide how to record data.
To decide which variables to control while planning an investigation;
To make new predictions based on the previous results.