

Year group:
Year 5



Term:
Spring

Electricity

National Curriculum: Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate ideas through discussion and annotated sketches. Select from a wide range of tools and equipment to perform practical tasks, cutting, shaping, joining and finishing accurately. Select from a wider range of materials and components according to their functional properties and aesthetic qualities. Evaluate their ideas and products against their own design criteria. Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Investigate and analyse a range of existing products. Understand and use electrical systems and in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors).

Key Knowledge and skills

Explore and investigate everyday appliances that use electricity – toys, torches, lamps, beepers.

Make simple series circuits using batteries, wires, bulbs and switches.

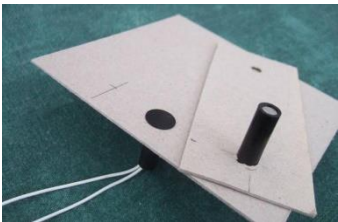
Reinforce and strengthen framework to make the switch durable.

Understand how electricity is used to drive products and how a motor when connected in an electrical circuit can be used to make things rotate.

Use symbols to draw circuit diagrams to represent and explain electrical circuits, in order to plan and modify circuits for a specific use or function.

Design and make switches for a specific use, using card, paper fasteners, wire, drawing pins etc.

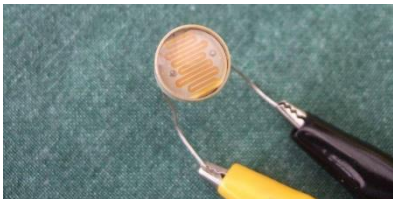
Recognise a range of commercially available switches, such as, micro switch, proximity switch, light sensor and tilt switch.



Proximity switch



Micro switch



Light sensor

Vocabulary

Electric circuit	Path through which an electric current passes.
Switch	A device which makes or breaks a circuit.
Push switch	Used to complete a circuit as long as the switch is pressed.
Toggle switch	A simple switch for turning a product on so that it stays on.
Stability	The strength to stand or endure; firmness.
2-way rotary switch	A switch that can be used to control more than one circuit.
Reinforce	To strengthen or support, especially with additional material.
Reversing switch	Use to change the direction of the electricity.
Diagram	A simplified drawing showing the appearance, structure, or workings of something.

Evaluate

Which switch did you use for your final product? Why?

How did you make the connections secure? Was it successful?

How can you make your alarm more reliable? How can you alter the materials?

What other products could your final switch be used in?

Outcome

To design and make an alarm system which alerts when a safe or secure box is opened or removed.

Tools and materials



Equipment include: scissors, automatic wire strippers, ruler, card drill or hole punch, card, corrugated plastic, paper clips, paper fasteners, aluminium foil.

