Manor Primary School Knowledge Organiser – KS2 Owls Science

Topic: Electricity	Phase: KS2	Strand: Physics

What should I already know?

- That electricity is used to power many objects that are used daily.
- Electricity can give us light.
- There are two different types of electrical currents (mains electricity and battery electricity)
- Electricity can be dangerous.

At the end of the unit, I will be able to:

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.
- Draw pictorial representations of simple circuits.
- Understand the precautions of working safely with electricity.

Key Knowledge

Thomas Edison was born in 1847 and died in 1931. He lived in the state of New Jersey in the United States of America (USA) He is known as one of the greatest inventors in history.
He invented the light bulb, the phonograph (which could record and play sound) and an early video camera called the Kinetograph.
The films were then watched on a Kinetoscope which he also invented.

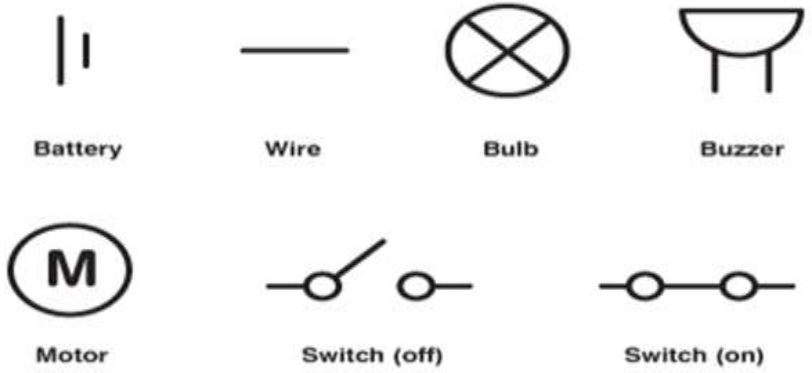
Common appliances that use electricity are: toasters, lamps, kettles, laptops, games consoles, phones, torches, TVs, washing machines and irons. Some appliances use batteries and some use mains electricity. Batteries can vary greatly in size, shape and power.
In a series circuit all the components are joined together and the electricity can only flow in one direction - You must learn the different symbols for the different components. Switches can be used to open and close circuits. However, a circuit will not work properly if: the cells aren't connected correctly (+ to - not ++ or - -) , a component isn't working or there's no bulb, the circuit has gaps, one of the components acts as an insulator.

We are MANOR! As Scientists we will …

Manners	Develop a respect and understanding for the natural world, its people, animals and plants. Share ideas, celebrate good work, value others' contributions, or discussions and debates.
Aspiration	Learn by being challenged in a series of well-designed scientific enquiry and investigation tasks linked to meaningful contexts and develop a knowledge of scientists and careers to broaden our horizons. Be aspirational in developing scientific knowledge and conceptual understanding through biology, chemistry and physics.
Nurture	To recognise that we live in a wonderful world made up of many different people and living things. We will develop an appreciation and respect for the diverse world and environment in which we live, showing care and compassion for the environment around us.
Open-Mindedness	We will be open-minded so that we can conduct experiments or observe what is happening in order to see patterns that might emerge or to gain new knowledge. We will use our curiosity and learn to wonder why something behaves a certain way.
Resilience	Engage confidently with the science curriculum and learn that anything is possible and failure is not something to fear but to learn from. We will develop our scientific enquiry and investigation skills with patience and care, repeating investigations to check the accuracy of results.

Diagrams and information

Main components of an electrical circuit



Electricity can occur naturally

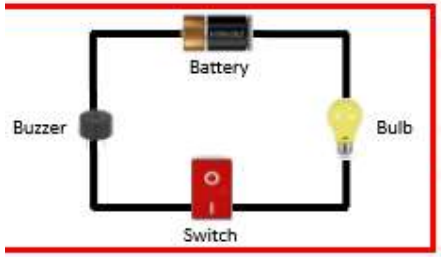
For example, lightning or static electricity

There are two types of electrical current that we use to power appliances.

Mains electricity

Batteries

Would the bulb light up?

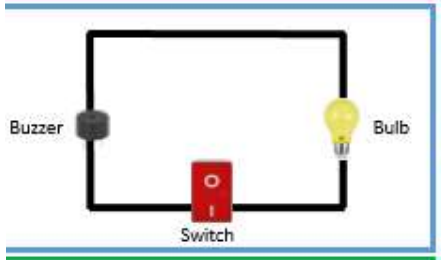


Will the bulb light?

Yes

Why?

The circuit has a battery and a bulb and is complete.

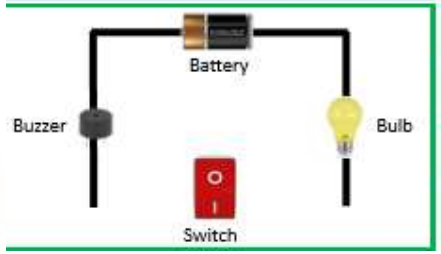


Will the bulb light?

No

Why?

The circuit has no battery to provide the electrical power.



Will the bulb light?

No

Why?

The circuit is not complete.

Insulators or conductors

A conductor of **electricity** is a material that will allow **electricity** to flow through it. Materials that are electrical insulators do not allow **electricity** to flow through them.

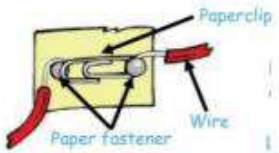
Switches

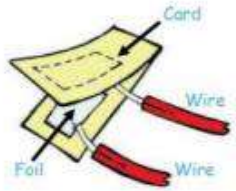
Push-to-break switches are off whilst the button is pushed but returns to its 'on' position when it is released.

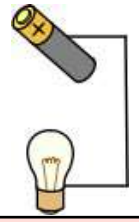
Push-to-make switches allows the electricity to flow through the circuit when it is pressed but when it is released the circuits is broken and the switch is off.

Handmade switches

There are different ways of making handmade switches. They involve using a conducting material between two wires that would complete the circuit when pushed together.





Forces and Magnets Quiz	
1) Objects that are made from materials that do not allow electricity to pass through are called?	
2) Will this circuit light up? 	
3) Another name for a battery is?	
4) Who invented the light bulb as well as several other inventions?	
5) Name 3 electrical devices that are mains powered and 3 electrical devices that are battery powered.	

Key Knowledge and vocabulary	
Battery	A container consisting of one or more cells that is used for generating current
Bulb	A glass bulb which provides light by passing an electrical current through a filament
Buzzer	An electrical device that makes a buzzing noise and is used for signalling (for example, in a burglar alarm)
Cell	A device used to generate electricity. A battery is an example of a cell
Circuit	A complete and closed path around which a circulating current can flow
Conductor	A material or device which allows heat or electricity to carry through
Static Electricity	A stationary electric charge, typically produced by friction, which causes sparks or crackling or the attraction of dust.
Electricity	A form of energy resulting from the existence of charged particles
Motor	A machine powered by electricity that supplies motive power for a vehicle or other moveable device
Switch	A device for making and breaking the connection in a circuit
Insulator	Any material that electricity cannot pass through or along