Science Y6 Electricity

What you've learnt already

Identify common appliances that run on electricity. (Y4 - Electricity.

Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity)

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. (Y4 - Electricity)

Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity)

Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)

Choices

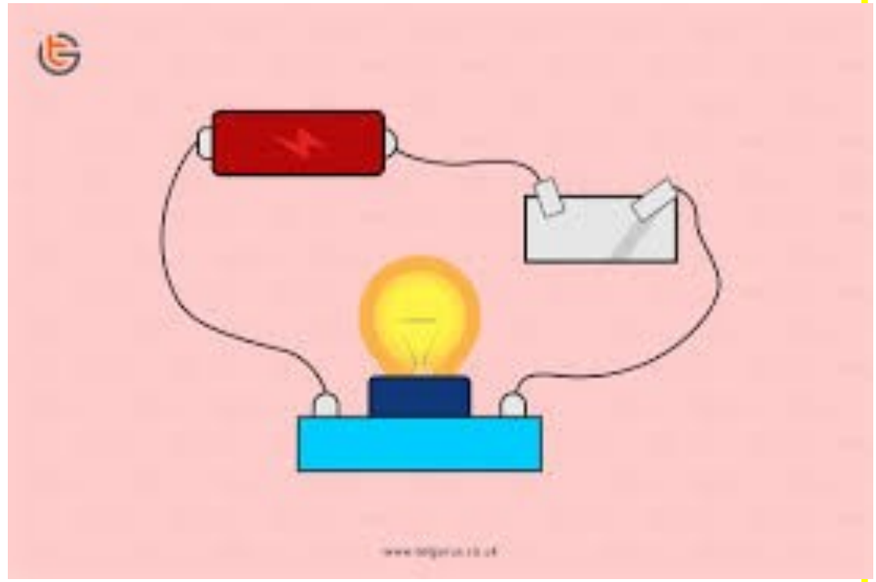
What footprint do we leave on our environments?
How can we reduce our energy use?
Should we use cleaner energy even if it costs more?

Key Vocabulary

electricity	The flow of an electric charge or current through a material
electrical conductor	A material that lets electricity pass through easily.
electrical insulator	A material which does not allow electricity to pass through easily .
cells	A device that stores electrical energy as a chemical.
battery	2 or more cells working together.
voltage	The measurement used for the force that makes electricity flow.
resistance	A measure of how difficult it is for electricity to pass through a material.
component	A part used in an electrical circuit.

Component	Symbol	Purpose
Cell (Battery)		Provides electrical energy
Power supply		Alternative to using cells
Wire		Allows current to travel
Bulb/light		Converts electrical energy into heat and light
Motor	M	Converts electrical energy into movement energy
Buzzer		Converts electrical energy into sound energy
Switch		Allows circuit to be opened or closed

Diagrams



Lesson Sequence

L1	How do we light the lamp?
L2	How can we change a circuit?
L3	How can we change the brightness of a lamp?
L4	How can we change how other components work?
L5	How can we predict which circuit will have the brighter lamp?

Key Knowledge

Circuit diagrams using standard symbols are used to record circuits.

Adding cells to a circuit makes a lamp brighter.

A lamp gets brighter if the voltage in the circuit is increased.

A lamp gets dimmer if thinner wires are used.

If the voltage is increased in a circuit, a buzzer makes a louder sound and a motor turns more quickly.

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Which materials are good electricity conductors?	Why are most wires made out of copper?	Why are wires covered in plastic?	What is the difference between a cell and a battery?
How does a switch work?	How can I make my motor spin faster?	Which types of cell have a higher voltage than AA ones?	Why might different cells make a bulb brighter?
Draw a circuit including 2 cells, 2 bulbs and a switch	What is an electrical current?	How can we identify faults in a circuit?	Who is Michael Faraday and what is he remembered for?
What happens if we have 2 cells in a circuit and we change the direction of one of them?	How can we change circuits to create different effects?	How is electricity generated? Give examples of both renewable and non-renewable	If I was investigating whether adding cells makes a bulb brighter, what variable would I change and which ones would stay the same?

One Point	Two Points	Three Points	Four Points

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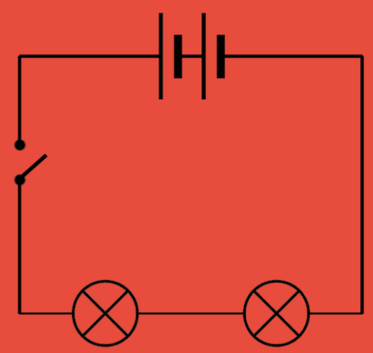
Which materials are good electricity conductors? Metals e.g. gold, copper	Why are most wires made out of copper? It's a good insulator and cheaper than gold	Why are wires covered in plastic? Safety—it's an insulator	What is the difference between a cell and a battery? A battery is 2 or more cells
How does a switch work? It completes or breaks the circuit	How can I make my motor spin faster? Add a cell or change to a higher voltage	Which types of cell have a higher voltage than AA ones? PP3	Why might different cells make a bulb brighter? Some are higher voltage
	What is an electrical current? The flow of electricity	How can we identify faults in a circuit? By removing and replacing one component at a time. Check that the cell is the right wy round if using a cell holder.	Who is Michael Faraday and what is he remembered for? British scientist, worked on electromagnetism, work led to invention of generators. Faraday cage—blocks electicity from inside
What happens if we have 2 cells in a circuit and we change the direction of one of them? They work against each other so the bulb won't light.	How can we change circuits to create different effects? Increase voltage for more light/ noise/movement. Add bulb/buzzer/motor to increase resistance so less light/ noise/movement	How is electricity generated? Give examples of both renewable and non-renewable Renewable—solar, wind, hydro, tidal Non-renewable –burn gas, oil, coal	If I was investigating whether adding cells makes a bulb brighter, what variable would I change and which ones would stay the same? Change—add cells All other variables stay the same