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)

<u>Choices</u>

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 con- ductor	A material that lets electricity pass through easily.	
electrical insu- lator	A material which does not allow electricity to pass through easily .	
circuit	A closed loop for electricity to flow round.	
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.	
lamp	Turns electrical energy into light	
buzzer	Turns electrical energy into sound.	
motor	A machine that turns electrical energy into movement.	
component	A part used in an electrical circuit.	
circuit symbols	Standard symbols used to represent compo- nents in a circuit diagram.	
switch	device for making and breaking the connec- tion in an electrical circuit.	

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Component	Symbol	Purpose
Cell (Battery)	$\dashv \vdash$	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	D-	Converts electrical energy into sound energy
Switch	-00-	Allows circuit to be opened or closed

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

Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright.

Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter.

Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well.

You can use recognised circuit symbols to draw simple circuit diagrams

Power stations use fossil fuels, nuclear or renewable energy to create electricity.

Key Working Scientifically Skills

Plan enquiries, including recognising and controlling variables where necessary.

Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.

Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.



Diagrams

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One Point	Two Points	Three Points	Fou
What happens if we have 2 cells in a circuit and we change the di- rection of one of them?	How can we change circuits create different effects?	to How is electricity generated? Give examples of both renewable and non-renewable	l ad er a
Draw a circuit including 2 cells, 2 bulbs and a switch	What is an electrical currer	nt? How can we identify faults in a circuit?	
How does a switch work?	How can I make my motor s faster?	pin Which types of cell have a higher voltage than AA ones?	w
Which materials are good elec- tricity conductors?	Why are most wires made of copper?	ut of Why are wires covered in plastic?	W

hat is the difference between a cell and a battery?

hy might different cells make a bulb brighter?

Who is Michael Faraday and what is he remembered for?

If I was investigating whether Iding cells makes a bulb brightr, what variable would I change and which ones would stay the same?

Ir Points

Science Y6 Electricity

Which materials are good elec- tricity 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	Wł
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	WI
	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.	Br tro
What happens if we have 2 cells in a circuit and we change the di- rection 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	l ade er, ai

hat is the difference between a cell and a battery?

A battery is 2 or more cells

hy might different cells make a bulb brighter? Some are higher voltage

Who is Michael Faraday and what is he remembered for?

ritish scientist, worked on elecomagnetism, work led to invention of generators. Faraday age—blocks electicity from inside

If I was investigating whether Iding cells makes a bulb brightr, what variable would I change and which ones would stay the same?

Change—add cells

I other variables stay the same