

Science

Electricity Year 6

Remember when

Electricity is a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices. (Y4)

Sources of light and sound may need electricity to work. (Y3/Y4)

Where electricity comes from. (Y4)

Which appliances need electricity. (Y4)

What a circuit is, the components of a circuit and how it works. (Y4)

What electrical conductors and insulators are. (Y5)

What happens when a switch is added to a circuit. (Y4)

What forces and resistance are. (Y3/Y5)

Sticky knowledge

- Children will know that adding more cells to a complete circuit will make a bulb brighter/buzzer louder/ motor spin faster
- Children will know that adding more bulbs to a complete circuit will make the bulbs dimmer. More motors will spin slower and more buzzers will be quieter
- Children will know that turning a switch off breaks a circuit so the electricity cannot flow
- Children will know the symbols that represent bulbs, wires, buzzers, cells and motors
- Children will know how to draw simple circuit diagrams
- Changing other components in a circuit may change how a bulb, motor or buzzer performs

Circuit Symbols	
Symbol	Component
	ammeter
	battery
	bulb
	buzzer
	cell
	motor
	resistor
	switch (open)
	switch (closed)

Key vocabulary

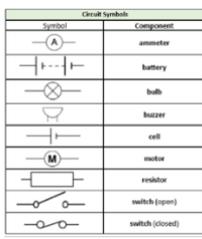
ammeter	fuses
appliance	generator
battery	insulator
bulb	light
cells	materials
circuit	motor
components	resistor
conductor	series circuit
electrical	switch
electrical	voltage
current	volts
electricity	wires
electrons	flow

National Curriculum

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- Use recognised symbols when representing a simple circuit in a diagram.

Common Misconceptions

- Larger-sized batteries make bulbs brighter
- Complete circuit uses up electricity
- Components in a circuit that are closer to the battery get more electricity.

LO	Knowledge and Skills	Lesson outline
<p>Lesson 1</p> <p>LO: To know how to make a simple circuit and explain how a switch works.</p> <p>Enquiry Type: N/A</p>	<p>Sticky Knowledge: Children will know that turning a switch off breaks a circuit so the electricity cannot flow</p> <p>Skill: Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>Children to have wires, cell and bulb- recap prior knowledge from year 4.</p> 
<p>Lesson 2</p> <p>LO: To know the symbols used when representing a simple circuit</p> <p>Enquiry Type:</p>	<p>Sticky Knowledge: Children will know the symbols that represent bulbs, wires, buzzers, cells and motors</p> <p>Children will know how to draw simple circuit diagrams</p>	<p>Children will identify the scientific symbols and create diagrams with the correct symbols</p>  <p>Children will also be encouraged to use the correct vocab when explaining</p>

Research	Skill: Record data and results of increasing complexity using scientific diagrams and labels	A memory quiz at the end of the session will be done- children to draw and explain how a complete circuit works.	
Lesson 3 LO: To know how the brightness of a lamp and volume of a buzzer can be changed by adding more or less cells Enquiry Type: Pattern Seeking	Sticky Knowledge: Adding more cells (voltage) to a complete circuit will make a bulb brighter/buzzer louder/ motor spin faster Skill: Record data and results of increasing complexity using line graphs Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate	Children to work in groups and conduct an investigation- whether the number of cells affects the brightness of the bulb. Prediction Variable I will change: Variable I will keep the same: (to make the test fair) Results- table Conclusion- was the prediction correct and what you found out	
Lesson 4 LO: To know how the brightness of a lamp and volume of a buzzer can be changed by adding more bulbs/ buzzers Enquiry Type: Pattern Seeking	Sticky Knowledge: Adding more bulbs to a complete circuit will make the bulbs dimmer. More motors will spin slower and more buzzers will be quieter Skill: Record data and results of increasing complexity using line graphs Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate	Children will apply what has been learnt through the investigations and recreate a circuit with including a buzzer. Does increasing the number cells make the buzzer louder? Children will then draw the circuit using the scientific symbols Prediction Variable I will change: Variable I will keep the same: (to make the test fair) Results- line graph Conclusion- was the prediction correct and what you found out	
Lesson 5 LO: To be able to set up a fair test to test variations in electrical components Enquiry Type: Comparative/ Fair test	Sticky Knowledge: Changing other components in a circuit may change how a bulb, motor or buzzer performs Skill: Use test results to make predictions to set up further comparative and fair tests	Children will apply what has been learnt through the investigations and recreate a circuit with including a buzzer, bulb and motor. Children to set up own investigations with a range of different materials. Children will then draw the circuit using the scientific symbols Prediction Variable I will change: Variable I will keep the same: (to make the test fair) Results- graph Conclusion- was the prediction correct and what you found out	
Lesson 6 LO: To apply understanding of switches and variations to make working traffic lights.	Sticky Knowledge: Recap all sticky knowledge from this unit Skill: Record data and results of increasing complexity using scientific diagrams and labels Enquiry Type: N/A	Children to be given example results from a number of different experiments and present the results through different ways: bar graphs, line graphs, scatter graphs and pie charts.	
Working towards	End of unit assessment		Working at a greater depth
Working at Age related expectations			

