



**Topic Title:** Electricity

**Year Group:** 6

**Academic Year:** 2024/2025

**Science Intent:**

**To build on their work from Year 4 to construct simple series circuits to help them to answer questions about what happens when they change different components**

Prior Scientific Learning/Linked Topics:	Literacy Links (including texts/media used):	Maths Links:
<p>Y4-</p> <p>Identify common appliances that run on electricity</p> <p>Construct simple series circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>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</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</p>	<p>Writing investigations and drawing conclusions</p>	



Scientific Knowledge	Working Scientifically
<ul style="list-style-type: none"> <li>• Associate the brightness of a lamp or the volume of a buzzer with a number and voltage of cells used in a circuit</li> <li>• Compare and give reasons for variations for how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>• Use recognised symbols when representing a simple circuit in a diagram</li> </ul>	<ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• using test results to make predictions to set up further comparative and fair tests</li> <li>• reporting and presenting 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</li> <li>• identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul>
<p><b>Content:</b>  <b>Lesson 1</b>  Explore electricity:</p> <ul style="list-style-type: none"> <li>- Key Vocabulary - Proton - <i>noun</i> - Tiny particles in the centre (nucleus) of an atom. Protons are positively (+) charged.</li> <li>- Electron – <i>noun</i> A tiny particle that <u>travels around</u> the nucleus of an atom. Electrons are negatively (-) charged.</li> <li>- Neutron – <i>noun</i> Neutrons are tiny particles that are found in the nucleus (centre) of an atom. Neutrons have no charge and are <u>neutral</u>. This means that they are not positive or negative.</li> </ul> <p><b>All:</b> I can list information that I already know about a topic  <b>Most:</b> I can refer back to my previous learning to inform my current learning  <b>Some:</b> I can expand on my ideas after discussion</p> <p>Task 1:  In your books complete the KWL on everything you already know about electricity.  Remember: It's ok if you're not sure!  Share ideas as a class and purple pen additional facts.</p> <p>Task 2:  Task 2: Whilst looking at the following slides and videos, make notes in your books to answer: What is electricity?  LA: Write about the difference between protons and electrons.  MA: Include some of the key vocabulary from the working wall.</p>	<p><b>Resources</b></p> <p>Cells  Wires  Lamps  Buzzers  Switches  Motors</p> <p>PPT  Symbol mats to support.  Circuit cards</p>



<p>Lesson 2 - <u>WALT investigate how different items react when charged</u></p> <p><b>All:</b> identify examples of static charge</p> <p><b>Some:</b> explain how items react when they have been statically charged</p> <p><b>Most:</b> justify what is happening when an item has a static charge</p> <p><b>Most:</b> explain the difference between static charge and current electricity</p> <p>Watch this video to support:  <a href="https://www.youtube.com/watch?v=yc2-363MIQs">https://www.youtube.com/watch?v=yc2-363MIQs</a></p> <p><b><u>Task 1 in books:</u></b></p> <p>Predict what will happen if I put the balloon next to:</p> <p><b><u>Prediction 1:</u></b></p> <p>My hair: <a href="https://www.youtube.com/watch?v=T0J5q43MSw8">https://www.youtube.com/watch?v=T0J5q43MSw8</a> (watch after experiment)</p> <p><b><u>Prediction 2</u></b></p> <p>Running water - <a href="https://www.youtube.com/watch?v=VhWQ-r1LYXY">https://www.youtube.com/watch?v=VhWQ-r1LYXY</a> (watch after prediction)</p> <p><b><u>Prediction 3</u></b></p> <p>Pepper grains - <a href="https://www.youtube.com/watch?v=k0OoLyEaf1k">https://www.youtube.com/watch?v=k0OoLyEaf1k</a> (watch after prediction)</p> <p>Task 2 -</p> <p>Using the experiments we have done today, explain what a static charge is and how it is different to current electricity.</p> <p>Mild - Compare static and current electricity (word bank to support)</p> <p>Spicy - Write about the experiments that we did and how these showed static charge.</p> <p>Hot - Include scientific vocabulary and references to protons and electrons.</p>	<p>Cells Wires Lamps Buzzers Switches Motors PPT Symbol mats to support. Circuit cards Investigation planner to support</p> <p><b>Resources</b> Cells Wires Lamps</p>
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<p><u>Lesson 3 - WALT</u> build and test a range of simple circuits using common components.</p> <p><b>All:</b> can build a simple circuit.</p> <p><b>Some:</b> can build and test a simple circuit.</p> <p><b>Most:</b> can explain the role of each component in a circuit.</p> <p>Task 1</p> <ol style="list-style-type: none"> <li>1. Practice building simple electric circuits. <ul style="list-style-type: none"> <li>• Plan your circuit using the picture cards of the different components.</li> <li>• Place the components on a whiteboard and draw lines to join them together.</li> </ul> </li> </ol> <p>Task 2</p> <ol style="list-style-type: none"> <li>2. Now build the circuit to see if it works.</li> </ol> <p>Task 3:</p> <p>With your table groups, can you make:</p> <p>A simple circuit</p> <p>A circuit with a switch</p> <p>A circuit with a motor</p> <p>A circuit with a switch and motor</p> <p>A circuit with 3 or more components of your choice</p> <p>Teachers, take pictures for books.</p> <p>TASK 4</p> <p>Draw a labelled diagram of a simple circuit, showing the terminals on the cell and the direction of flow of electricity.</p>	<p>Switches</p>
<p><u>Lesson 4 WALT</u> plan to investigate how voltage affects the brightness of a bulb in a circuit.</p> <p><b>All:</b> explain what a voltage is.</p> <p><b>Some:</b> can plan and investigate how voltage effects a bulb.</p> <p><b>Most:</b> discuss my findings.</p> <p>Task1: Look at a range of cells and batteries with their voltages covered. If you do not have any, use the images provided on the next slide.</p>	

1. Measure the length of each one.
2. Predict the voltage of each one.
3. Reveal the voltage of each cell or battery. Record your findings in a table.

Task 2: Plan an investigation to answer Sofia's question:

1. Discuss and record:
2. What equipment you will need?
3. What you will do?
4. Which variables you will change?
5. Which variables you will control?
6. What you will measure and how you will measure it?

TTYP: Does voltage affect the brightness of a bulb?



**Lesson 5 WALT:** Predict and test how to change the volume of buzzers in a circuit

**All:** predict the outcome of an investigation.

**Some:** create a circuit testing different voltages.

**Most:** explain how the voltage affects a circuit.

Task 1:

Use what you have learnt about variables affecting the brightness of a bulb to make predictions to answer these questions:

How does increasing the voltage of a cell or battery affect the volume of a buzzer?

How does changing the number of components in a circuit affect the volume of a buzzer?

How does changing the position of the buzzer in a circuit affect the volume of a buzzer?

Begin each prediction with, "I predict that ..."

For each of them, explain why.



Task 2:

variable changed	components	circuit diagram	prediction	buzzer volume (dB)
basic circuit	2 cells, 1 buzzer		none needed	
increased voltage				
increased number of components				
position of buzzer				

Lesson 6 WALT: Explain how a switch is used in a simple circuit.

**All:** Know the function of a switch

**Most:** Create a circuit with a switch

**Some:** explain how a switch affects a circuit.

**Task 1:**

Help Lucas to design and make an innovative switch to control both circuits and:

- light one bulb at a time
- light both bulbs at the same time

You will need to decide how to complete the circuit.

You should make your switch from everyday conductors and insulators.



**Key Vocabulary:** voltage brightness volume switches danger series circuit working safely with electricity electrical safety sign circuit diagram switch bulb buzzer motor recognised symbols

**Stunning Start/Marvellous Middle/Fabulous Finish:**

**OAA/Trips/Visits/Visitors:**