

## Introduction

This unit builds on from the Year 4 Electricity unit. Children will learn to represent circuits using symbols in a diagram. They will learn about two of the most important scientific inventors in the field of electricity – Thomas Edison and Nikola Tesla. Children will get the opportunity to develop their understanding of what electricity is and how to measure it. As well as conducting their own investigation, they will get the opportunity to create their own torch!



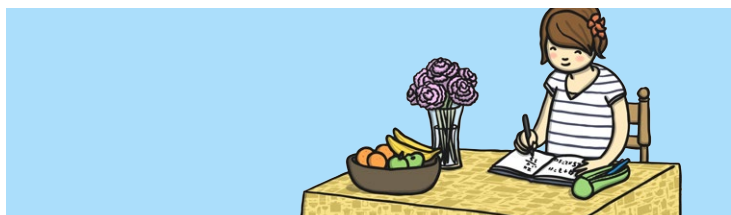
## Health & Safety

(including food allergies)

Ensure that all children understand how to use electricity safely.

It is recommended that no open wires are used to construct circuits and that all wires should have crocodile clips attached. If open wires are to be used, children should be supervised in small groups.

Check that all equipment meets school health and safety regulations and is tested prior to use by children.



## Home Learning

**Creating Circuits:** Children create online circuit diagrams using this [website](#). Children practise creating different types of circuits as well as improving their knowledge and understanding of circuit symbols.

**Electric Circuits Worksheet:** Children label electric circuit symbols and fill in the missing words to explain how current moves around the circuit.



## Wider Learning

**Possible trips/visitors/books/weblinks**

This [website](#) allows children to review all aspects of their learning on circuits, circuit diagrams and voltage.

[The Faraday Museum at the Royal Institute:](#) Children can explore Michael Faraday's laboratory, where he conducted many of his experiments.

## Assessment Statements

By the end of this unit...

**...all children should be able to:**

- know the main circuit symbols and use these to draw circuit diagrams;
- be able to plan and conduct an investigation;
- plan an investigation based on the results of a previous investigation;
- decide how to record data.

**...most children will be able to:**

- explain how our understanding of electricity has changed over time;
- draw circuit diagrams using the correct symbols and label the voltage correctly;
- decide which variables to control while planning an investigation;
- decide how to report their findings;
- make new predictions based on the previous results;
- select an appropriate scientific enquiry.

**...some children will be able to:**

- explain how major discoveries led to the widespread use of electricity;
- explain the effect of increasing or decreasing the voltage on different parts of a circuit;
- explain how they have ensured a high degree of trust in their results;
- identify variations in component function.

**To look at all the resources in the Electricity unit** [click here](#).

**To find out more about PlanIt download our** [free guide here](#).

# Lesson Breakdown

## Resources

### 1. It's Electrifying!

Identifying scientific evidence that has been used to support or refute ideas or arguments in the context of the major discoveries made by scientists in the field of electricity.

- I can explain the importance of the major discoveries in electricity.



### 2. Circuit Symbols

Use recognised symbols when representing a simple circuit in a diagram by observing and explaining the effect of different volts in a circuit.

- I can observe and explain the effects of differing volts in a circuit.



### 3. Volts

Associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit by observing and explaining the effect of different volts in a circuit.

- I can observe and explain the effects of differing volts in a circuit.

- Electrical wires with crocodile clips
- Bulbs
- Bulb holders
- Batteries (a selection of batteries with different voltages)
- Battery holders (single and double)
- Buzzers
- Motors
- Switches



### 4. Electricity Investigation (Part 1)

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

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary by investigating the relationship between wire length and the brightness of bulbs or the loudness of buzzers.

- I can plan an investigation.
- I can understand variations in how components function.

- Electrical wires with crocodile clips (need a selection of short and long wires)
- Bulbs
- Bulb holders
- Batteries
- Battery holders (single and double)
- Buzzers
- Motors
- Switches



### 5. Electricity Investigation (Part 2)

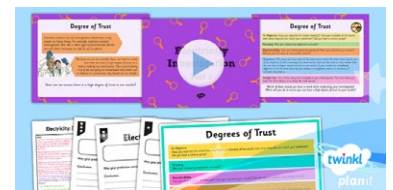
Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

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 by conducting an investigation, presenting and report findings on the effect of wire length on the brightness of bulbs or the loudness of buzzers.

- I can conduct an investigation.
- I can record my data and report my findings.

- Electrical wires with crocodile clips (need a selection of short and long wires)
- Bulbs
- Bulb holders
- Batteries
- Battery holders (single and double)
- Buzzers
- Motors
- Switches
- Completed Electricity Investigation Activity Sheets (from Lesson 4)



## Lesson Breakdown

### 6. Electricity Investigation (Part 3)

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

Using test results to make predictions to set up further comparative and fair tests by planning and conducting a further investigation.

- I can investigate my results further.

## Resources

- Electrical wires with crocodile clips (need a selection of short and long wires)
- Bulbs
- Bulb holders
- Batteries
- Battery holders (single and double)
- Buzzers
- Motors
- Switches

