

Topic:	Year group	Term
Electricity	4	Spring

Background knowledge

This is the first unit on electricity therefore children will have a range of prior knowledge. Standard symbols for electricity are not used in year 4 but are introduced in year six. In year 4, the children construct series circuits; these are circuits where the current has only one pathway. Parallel circuits are introduced in year 6 where the current is broken up down several parallel pathways.

The children will study Benjamin Franklin as part of the unit and this can lead into investigations on static electricity. The book "Now and Ben" is available in school. Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work. A switch can be added to the circuit to turn the component on or off.

Metal are good conductor so they can be used as wires in a circuit. Non-metallic solids are insulators except graphite (pencil lead). Water, if not completely pure, also conducts electricity.

Common misconceptions

Electricity flows to bulbs, not through them.

Electricity flows out of both ends of the battery.

Electricity works by simply coming out of one end of the battery into the component.

What should I already know?

Children know about similarities and differences in relation to places, objects, materials and living things. They talk about features of their own immediate environment and how environments might vary from one another. They explain why some things occur and talk about changes. (ELG)

National Curriculum Objectives / Key Skills

The Journey

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- 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.
Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

Working scientifically

Talk about criteria for grouping, sorting and classifying (non-statutory).

Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Asking relevant questions and using different types of scientific enquiries to answer them.

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

1. Common appliances that use electricity
2. Build and draw series circuits
3. What has gone wrong?
4. Conductors and insulators
5. Conductivity within a circuit

Scientific enquiry



Outcomes

Working towards: I can name several electrical appliances. I can construct and draw a simple series circuit stating the function of each component with support. I can start to say whether a bulb will light in a circuit. I can investigate and identify electrical conductors and insulators. I can what a switch is used for. I can investigate the effect of changing the number of bulbs in a circuit stating what I observed. I can record my findings in a table.

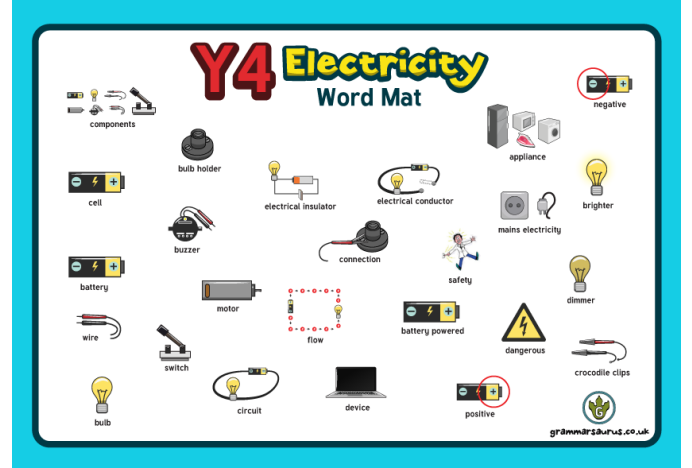
Expected: I can name a range of electrical appliances. I can construct and draw a simple series circuit stating the function of each component. I can say whether a bulb will light in a circuit. I can investigate and identify electrical conductors and insulators giving everyday examples of their use. I can state the function of a switch. I can investigate the effect of changing the number of bulbs in a circuit explaining my findings using a simple comparative statement. I can record my findings clearly in a table.

Exceeding; I can name a range of electrical appliances stating their use. I can confidently construct and draw a simple series circuit stating the function of each component. I can say whether a bulb will light in a circuit explaining why. I can investigate and identify electrical conductors and insulators giving everyday examples of their use stating why they are fit for purpose. I can explain how a switch works. I can investigate the effect of changing the number of bulbs in a circuit clearly explaining my findings using a simple comparative statement suggesting why this may be the case. I can draw and record my findings clearly in a table.

Key Vocabulary

Timeline / Diagrams

Appliances- a piece of equipment.
 Battery- a device that produces electricity.
 Bulb- an electrical device that lights up.
 Buzzer- an electrical device that produces a buzzing sound.
 Circuit- a complete route which an electrical current can flow around
 Conductor- lets electricity flow through.
 Current- a flow of electricity through a wire.
 Insulator- doesn't let electricity flow through.
 Wire- a long piece of metal that carries an electrical current covered by plastic for safety.



Key people / places

STEM job; Electrician.
 Benjamin Franklin.

Assessment questions / outcomes

1. Name things that use electricity.
2. List a range of electrical appliances.
3. Make a simple circuit and tell a friend the name of the different component and what they do.
4. Sort material into conductors and insulators.
5. Why is a wire covered in plastic?
6. Explain how the switch you made works.
7. What happens when you add bulbs to the circuit? Why?
8. Explain how your model works to a friend.