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| Parklands Primary School - Science |
| Topic - Electricity | Year 4 – Strand - Physics |
| What should I already know? | Vocabulary |
| * **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**.
* **Sources** of light and sound may need **electricity** to work**.**
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| appliances | a **device** or machine in your [home](https://www.collinsdictionary.com/dictionary/english/home) that you use to do a [job](https://www.collinsdictionary.com/dictionary/english/job) such as cleaning or [cooking.](https://www.collinsdictionary.com/dictionary/english/cook)**Appliances** are often **electrical**. |
| battery | small **devices** that provide the **power** for[**electrical**](https://www.collinsdictionary.com/dictionary/english/electrical) [items](https://www.collinsdictionary.com/dictionary/english/item) such as [torches](https://www.collinsdictionary.com/dictionary/english/torch) |
| bulb | the [glass](https://www.collinsdictionary.com/dictionary/english/glass) part of an [**electric**](https://www.collinsdictionary.com/dictionary/english/electric) [lamp,](https://www.collinsdictionary.com/dictionary/english/lamp) which gives out light when **electricity** passes through it. |
| buzzer | an [**electrical**](https://www.collinsdictionary.com/dictionary/english/electrical) **device** that is used to make abuzzing sound |
| cell | a synonym for **battery** |
| circuit | a complete route which an **electric current** can flow around |
| component | the parts that something is made of |
| conductor | a substance that heat or **electricity** can pass through or along |
| current | a flow of [**electricity**](https://www.collinsdictionary.com/dictionary/english/electricity) through a **wire** or [**circuit**](https://www.collinsdictionary.com/dictionary/english/circuit) |
| device | an object that has been [invented](https://www.collinsdictionary.com/dictionary/english/invent) for aparticular [purpose](https://www.collinsdictionary.com/dictionary/english/purpose) |
| electricity | a form of **energy** that can be carried by **wires** and in used for heating an lighting, and toprovide **power** for **devices** |
| energy | the **power** from **sources** such as **electricity** that makes machines work or provides heat |
| fuel | a substance such as coal, [oil,](https://www.collinsdictionary.com/dictionary/english/oil) or petrol that is burned to [provide](https://www.collinsdictionary.com/dictionary/english/provide) heat or **power** |
| generate | cause it to begin and develop |
| insulator | a non-**conductor** of **electricity** or heat |
| mains | where the [supply](https://www.collinsdictionary.com/dictionary/english/supply) of water, **electricity**, orgas [enters](https://www.collinsdictionary.com/dictionary/english/enter) a building |
| motor | a **device** that uses [**electricity**](https://www.collinsdictionary.com/dictionary/english/electricity) or [fuel](https://www.collinsdictionary.com/dictionary/english/fuel) to produce movement |
| power | **Power** is **energy**, [especially](https://www.collinsdictionary.com/dictionary/english/especially) [**electricity**,](https://www.collinsdictionary.com/dictionary/english/electricity) that is obtained in large quantities from a [fuel](https://www.collinsdictionary.com/dictionary/english/fuel) **source** and used to operate lights, heating,and [machinery](https://www.collinsdictionary.com/dictionary/english/machinery) |
| source | where something comes from |
| switch | a small control for an **electrical device** which you use to turn the **device** on or off |
| wires | a long thin piece of metal that is used to fasten things or to carry **electric current** |

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| What will I know by the end of the unit? |
| Where does **electricity** come from? | * **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
* These can also be called **fuel sources.**
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| Which**appliances** run on **electricity**? | * Some **appliances** use **batteries** and some use

**mains electricity**.* **Batteries** come in different sizes depending on how much and for how long the

**appliance** is used.* Common **appliances** that use **electricity**.

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| How does a**circuit** work? | * A complete **circuit** is a loop that allows

**electrical current** to flow through **wires**.* A **circuit** contains a **battery (cell)**, **wires** and an

**appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).* The **electrical current** flows through the wires from the **battery (cell)** to the **bulb, motor** or **buzzer**).
* A **switch** can break or reconnect a **circuit**.
* A **switch** controls the flow of the **electrical current** around the **circuit**. When the **switch** is off, the **current** cannot flow. This is not the same as an incomplete **circuit**.
 |
| What are**electrical conductors** and **insulators**? | * When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through. Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**.
* Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.
 | DiagramsThese **circuits** will not work as they are incomplete.These are complete **circuits** - they have a **battery (cell)** and a**component** (**bulb).**The **wires** are placed in the right places of the **battery** for the**circuit** to work. |
| Investigate |
| * Research how to work safely with **electricity**.
* Make a variety of **circuits**, investigating which **circuits** work and why.
* Name the basic parts including **cells, batteries, wires, bulbs, switches, motors** and **buzzers.**
* Draw **circuits** using pictorial representations (not circuit symbols).
* Create **circuits** using **switches**.
* Investigate which materials are **electrical conductors** and

**insulators**.* Plan own investigation - e.g. Does the number of bulbs / batteries affect the brightness of the bulb?
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| Question 1: Another name for a battery is: | Start ofunit: | End ofunit: |  | Question 7: Why is it dangerous to use an electrical appliance near water? | Start of unit: | End of unit: |
| circuit |  |  |  |  |  |
| light |  |  |
| buzzer |  |  |
|  |
| Question 2: Which of these need electricity to work? | Start of unit: | End of unit: |
| torch |  |  |
| mobile phone |  |  |
| games console |  |  |
| car |  |  |
|  |  |
| Question 3: How will you know if amaterial conducts electricity? | Start ofunit: | End ofunit: | Question 8: A circuit will not work if….(tick three): | Start of unit: | End of unit: |
| Electricity will flow freely and thecircuit will work |  |  | There is no battery |  |  |
| There is no switch |  |  |
| The battery will not work  |  |  | The switch is off |  |  |
| Electricity will not flow and thecircuit will not work |  |  | There is a break in the circuit |  |  |
|  |  |  |  |
| Question 4: Which of these are conductors of electricity? | Start ofunit: | End ofunit: | Question 9: When more batteries are added to a complete circuit… | Start of unit: | End of unit: |
| plastic comb |  |  | The light bulb does not go on |  |  |
| cardboard strip |  |  | The light bulb becomes brighter |  |  |
| aluminium spoon |  |  | The circuit does not work |  |  |
| copper coin |  |  | The switch goes off |  |  |
|  |  |
| Question 5: Which of these circuits will light? | Start ofunit: | End ofunit: | Question 10: Why will this circuit not work? | Start of unit: | End of unit: |
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| Question 6: Objects that are made from materials that do **not** allow electricity to pass through are called: | Start of unit: | End of unit: |
| conductors |  |  |
| insulators |  |  |
| batteries |  |  |