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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**.** | | | |  |  | | --- | --- | | 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 a  buzzing 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 a  particular [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**, or  gas [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** | |
| 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.** | |
| 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**. | |
| 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**. | Diagrams  These **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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|  | | | | Topic - Electricity | | | | | Year 4 – Strand - Physics | | | | |
| Question 1: Another name for a battery is: | Start of  unit: | | | | | End of  unit: |  | 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 a  material conducts electricity? | Start of  unit: | | | | End of  unit: | | Question 8: A circuit will not work if….(tick three): | | | Start of unit: | | End of unit: |
| Electricity will flow freely and the  circuit will work |  | | | |  | | There is no battery | | |  | |  |
| There is no switch | | |  | |  |
| The battery will not work |  | | | |  | | The switch is off | | |  | |  |
| Electricity will not flow and the  circuit will not work |  | | | |  | | There is a break in the circuit | | |  | |  |
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| Question 4: Which of these are conductors of electricity? | | Start of  unit: | | | End of  unit: | | 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 of  unit: | | End of  unit: | | 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 | | |  | |  | |