MORDA CE PRIMARY SCHOOL

Science – Electricity Knowledge Organiser: Roses Year 4/5 Autumn 2022

Key Skills	Key enquiry questions
Year 4 Pupils should be taught to: Describe why a bulb won't light and identify the problem within the circuit. Construct and record a simple series circuit, and name its basic parts, including cells, wires, bulbs, switches and buzzers. Know that a bulb lights up when there is an effective conducting material in the circuit and is part of a complete circuit. Describe what happens when making and breaking a circuit, recognise that a switch opens and closes a circuit and link to the lighting of a bulb. Identify common appliances that run on electricity. Recognise common conductors and insulators and associate metals with being good conductors	https://www.coolkidfacts.com/michael-faraday-facts/ Use this site for child-friendly facts. **What is electricity?** (natural electricity, mains and battery) I can explain ways that electricity is generated. **Where does electricity come from?** (fossil fuels, geothermal, hydro and wind, solar and nuclear) I can explain where electricity comes from. **What is renewable electricity?** I can explain ways that electricity is generated. I can explain where electricity comes from. **What is an appliance?** I can identify electrical appliances and non-electrical appliances. I can sort appliances based on whether they use mains or battery power. **How do we keep safe with electricity?** I can explain how to stay safe around electricity. **What is a circuit?** I can understand how electrons move in complete and incomplete circuits. I can explain how a circuit works and why it might not work. I can predict and test complete and incomplete circuits.

Year 5 Pupils should be taught to: Explain scientifically what happens if you change the number of bulbs. Record and construct a series electrical circuit, identifying and naming its basic parts. Identify whether or not a bulb will light in a simple series circuit based on whether or not the bulb is part of a complete loop with a battery. Explain how to/what happens when you connect more than 1 battery. Describe the use of conductors & insulators in wires	**What is a switch?** I can explain that a switch turns the electric current on and off. I can create a circuit containing a switch. I can explain how a switch works and why they are needed. **What is a conductor?** **What is an insulator?** I can explain why some materials conduct electrical currents and why others don't. I can test materials to check if they are conductors or insulators. I can identify and sort materials into electrical conductors or insulators.

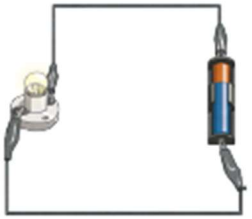
Key Vocabulary	
electricity	The flow of an electric current through a material, e.g. from a power source through wires to an appliance.
appliances	A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.
battery	A device that stores electrical energy as a chemical. Two or more cells joined together form a battery.
circuit	A pathway that electricity can flow around. It is based around wires and a power supply. Examples of components (parts) you can add in to a circuit are bulbs, switches, buzzers and motors.

Key Vocabulary	
mains electricity	Electricity supplied through wires to a building.
electrical conductor	A conductor of electricity is a material that will allow electricity to flow through it.
electrical insulator	Materials that are electrical insulators do not allow electricity to flow through them.

Series Circuit

A circuit where the components are connected in a loop.
Electricity flows through each component in a single pathway.

Complete Circuit



Electricity can flow. The components will work.

Incomplete Circuit

There is a break in the circuit that prevents the **electricity** from flowing. The components will not work.

Switches can be used to open or close a circuit. When off, a switch 'breaks' the circuit to stop the flow of **electricity**. When on, a switch 'completes' the circuit and allows the **electricity** to flow.

push button switch

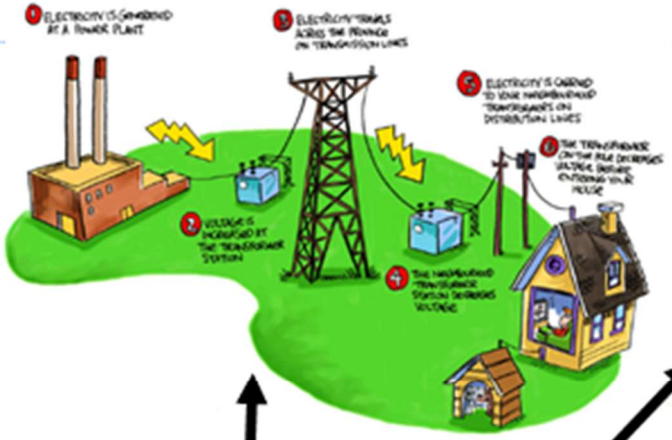
slide switch

Components (Parts) Vocabulary

cell: Normally, we would call this a battery but scientifically, this is a cell. Two or more cells joined together form a battery. 	**bulb**: Lights up in a complete circuit. 	**buzzer**: Makes a noise in a complete circuit. 
wires: Used to connect the different components in the circuit together. 	**motor**: Produces movement in a complete circuit. 	**switch**: Used to turn other components in the circuit on or off. 

ELECTRICITY

Where does electricity come from?



How do switches work?

Switches can be used to open or close a **circuit**. When off, a switch 'breaks' the **circuit** to stop the flow of **electricity**. When on, a switch 'completes' the **circuit** and allows the **electricity** to flow.

push button switch

slide switch

Which items need electricity to

Appliances

Many everyday **appliances** rely on **electricity** for them to work. Some **appliances** use **mains electricity** (are plugged into a socket) and others have a **battery** to make them work. Examples of **mains**-powered **appliances** include toasters and televisions. **Battery**-powered **appliances** can include mobile phones and torches.

How can we use electricity safely?

To work safely with **circuit** components in the classroom:

- None of the equipment needs to use mains power, so do not put any of it in or near plugs.
- Report any damaged or broken equipment to your teacher. Do not use it.
- Only use equipment as instructed.
- Connect equipment correctly.
- Disconnect equipment after use and put it away neatly.

Which materials let electricity flow through them?

Examples of **Electrical Conductors**

Examples of **Electrical Insulators**

Materials can be tested in a **circuit** to see if they are **electrical conductors** or **electrical insulators**.

10p = metal = **electrical conductors**

test **circuit**

ruler = plastic = **electrical insulators**

How does electricity occur naturally?