


TMS Science Launchpad - Year 2023/2024

Year 4 - Physics : Electricity

Substantive knowledge:

Electricity (mains) can be dangerous and it is important to know how to work with electricity safely.



A source of electricity (mains or battery) is needed for electrical devices to work. 
Kettle, lamp, television etc uses the mains electricity.



A mobile phone, tablet, torch uses batteries.

Electricity sources push electricity round a **circuit**.

A **complete circuit** is needed for electricity to flow and devices to work.

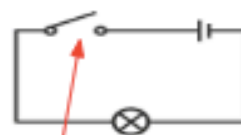
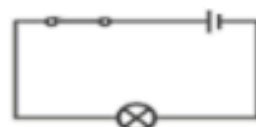
A complete circuit is a loop that allows electrical current to flow through wires.

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.



Some materials allow electricity to flow easily and these are called **conductors**, (such as copper, iron and steel).










Materials that don't allow electricity to flow easily are called **insulators** (such as plastic, wood, glass and rubber).

Vocabulary:

electricity, electric current, appliances, mains, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component, short circuit, connections, positive, negative

Disciplinary knowledge

Identify and classify 	Pattern seeking 	Observation over time 	Identify and classify 	Comparative tests 	Comparative tests 
How would you group these electrical devices? (observe closely)	Which room has the most electrical sockets in a house? (to make a prediction)	How long does a battery light a torch for? (evaluate an enquiry)	What are the components needed for a complete circuit and their functions? (ask scientific questions)	Which metal is the best conductor of electricity? (plan an enquiry)	How does the thickness of a conducting material affect how bright the lamp is? (to make a prediction)
Research 					
How has electricity changed the way we live? How does a light bulb work? How can electricity be worked with safely?					