

# Max and Kit's Electronic Engineering Challenge

*Learning objective: To understand the fundamental components and principles of simple electrical circuits, including conductors, insulators, and switches.*

Read each flashcard carefully. Max the monkey has provided the technical terms, and Kit the fox has explained how they function in a circuit. Use these to master your knowledge of electronics!

**What is an electrical circuit?**

A complete loop that allows electricity to flow from a power source, through components, and back again.

**Define a 'conductor' and give an example.**

A material that allows electricity to pass through it easily, such as copper or aluminium.

**What is the purpose of an insulator?**

To stop the flow of electricity, keeping us safe from shocks by covering wires with materials like plastic or rubber.

**How does a switch function in a circuit?**

It acts as a bridge that can be closed to complete the circuit or opened to break it, controlling the flow of electricity.

**What is the difference between a cell and a battery?**

A cell is a single unit that provides energy, whereas a battery is a collection of two or more cells connected together.

**Explain the role of a component in a circuit.**

A component is a specific part that performs a task, such as a bulb that produces light or a buzzer that makes sound.

**What is 'resistance' in an electronic circuit?**

A measure of how much a material opposes the flow of electric current.

**Why must a circuit be 'closed' for a bulb to light up?**

Electricity requires a continuous path; if there is a gap, the flow is interrupted and the circuit is 'open'.

**What does a 'filament' do inside a traditional bulb?**

It is a thin wire that heats up until it glows when electricity flows through it.

**If a circuit costs £2.50 for a bulb and £4.25 for a battery pack, what is the total cost?**

£6.75.

**Why is copper often used for electrical wiring?**

It is an excellent conductor with very low resistance, allowing electricity to travel efficiently.

**What is the main danger of a short circuit?**

It creates a path of very low resistance, which can cause wires to overheat and potentially start a fire.