



KNOWLEDGE ORGANISER

SCIENCE: DANGER:LOW VOLTAGE

YEAR SIX

KEY KNOWLEDGE:

QUESTION 1: What are the symbols for simple circuits?

ANSWER



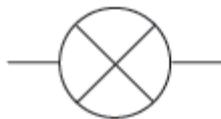
Switch



Cell



Battery



Lamp



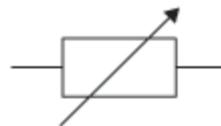
Voltmeter



Ammeter



Resistor



Variable resistor



Motor

QUESTION 2: What does a circuit need to work?

ANSWER

- A circuit always needs a power source, such as a **battery**, with wires connected to both the **positive (+)** and **negative (-)** ends. A battery is also known as a **cell**.
- A circuit can also contain other electrical **components**, such as bulbs, buzzers or motors, which allow electricity to pass through.
- Electricity will only travel around a circuit that is **complete**. That means it has no gaps.
- When a switch is open (off), there is a gap in the circuit. Electricity **cannot** travel around the circuit.
- When a switch is closed (on), it makes the circuit complete. Electricity **can** travel around the circuit.

Adding **more batteries** to a simple circuit will increase the electrical energy, which will make a bulb **brighter**. **Lengthening the wires** in a simple circuit will reduce the electrical energy, as it has further to travel. The extra distance will make the bulb **dimmer**.

3)What is the difference between a parallel and series circuit?

There are two types of circuit we can make, called **series** and **parallel**. The components in a circuit are joined by wires.

- if there are no branches then it's a series circuit
- if there are branches it's a parallel circuits



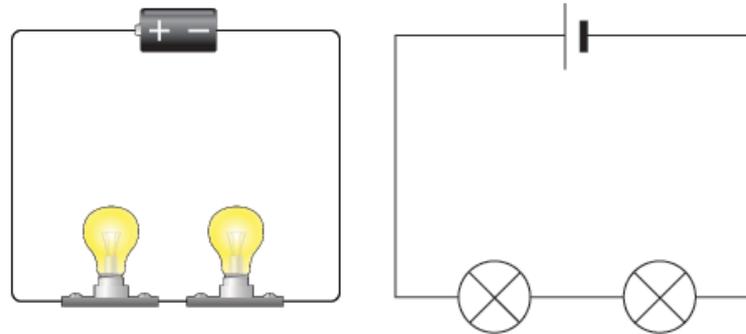
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Series circuits

If you follow the circuit diagram from one side of the cell to the other, you should pass through all the different components, one after the other, without any branches.

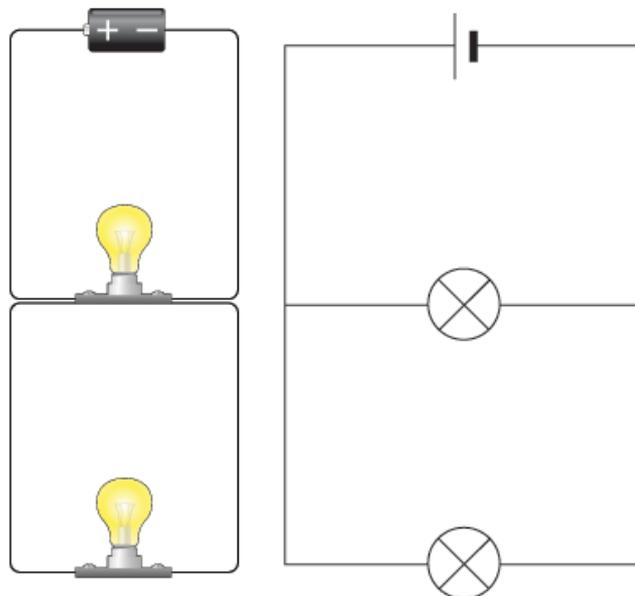


If you put more lamps into a series circuit, the lamps will be dimmer than before.

In a series circuit, if a lamp breaks or a component is disconnected, the circuit is broken and all the components stop working.

Parallel circuits

In parallel circuits different components are connected on different branches of the wire. If you follow the circuit diagram from one side of the cell to the other, you can only pass through all the different components if you follow all the **branches**.



In a parallel circuit, if a lamp breaks or a component is disconnected from one parallel wire, the components on different branches **keep working**. And, unlike a series circuit, the lamps stay bright if you add more lamps in parallel.