

CIRCUITS

Power source

wires

Fuse

Load

Switch

1 Read the text and label the picture with the name of each part.

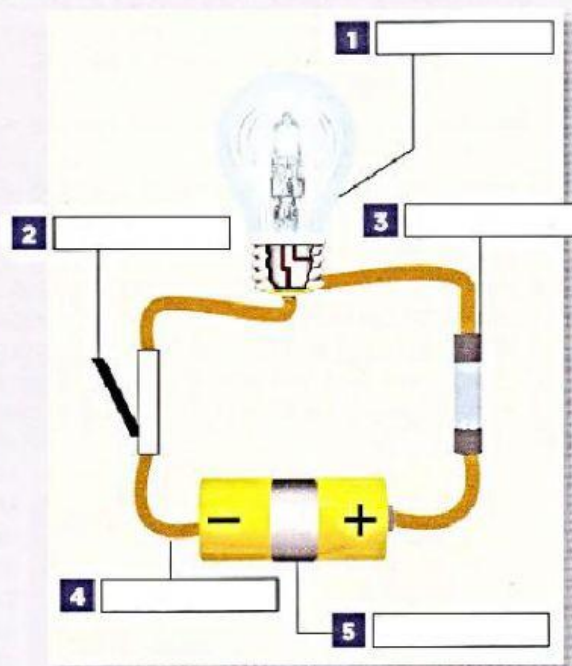
An electric circuit or network is a pathway through which the electric current can flow. A simple circuit consists of a **power source**, two conducting **wires**, each one attached to a terminal of the source and a **device** through which electricity can flow. This device is called a **load** and it's attached to the wires. If all the parts are properly connected, the current flows and the lamp lights up. This kind of circuit is called 'closed'.

On the contrary, if the wires are disconnected the circuit is called 'open' or 'broken'. The circuit can be opened and closed by a device called a **switch**.

Loads can **turn** electrical energy **into** a more useful form. Some examples are:

- **light bulbs**, which change electrical energy into light energy;
- **electric motors**, which change electrical energy into mechanical energy;
- **speakers**, which change energy into sound.

The source provides the electrical energy used by the load. It can be a storage battery or a generator. The switch interrupts the current delivered to the load by the source and allows us to control the flow.



When an abnormally high amount of current passes through a network, you get a **short circuit**. This may occur when there is a drop in the **resistance** or a broken insulation. In order to **prevent** short circuits, it is best to use **fuses**, which **melt** when too much current flows through them, interrupting in this way the circuit.

2 Match the words with their definitions.

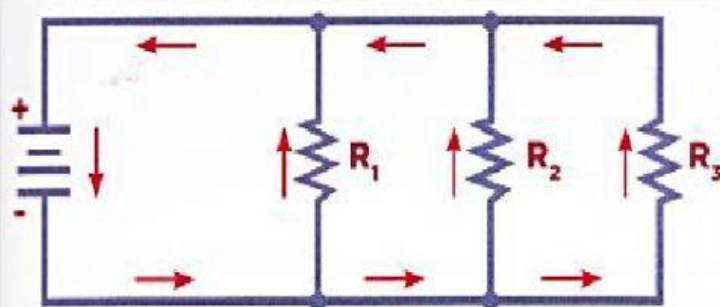
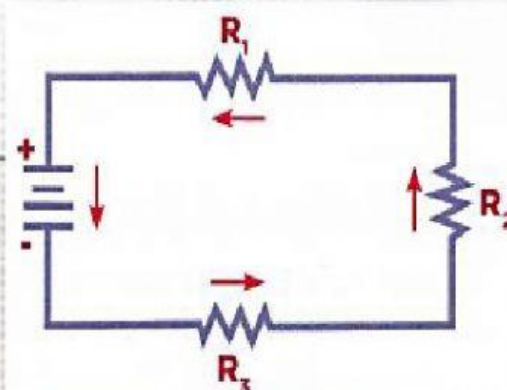
- 1 load
- 2 switch
- 3 source
- 4 fuse
- 5 closed circuit
- 6 broken circuit

- a device which interrupts the circuit
- a circuit in which wires are disconnected
- a device which provides power
- a complete circuit with no breaks at all
- a device which consumes electric power
- a protective device

4 6 Complete the texts with the words in the box. Then listen and check.

components current turn on branch amount
positive appliances continue burns out path

The (1) components of a circuit can be wired in two different ways: series or parallel. If components are **arranged** one after another to form a single (2) path between the terminals and the components, the circuit is known as a **series circuit**. In this type of circuit, the (3) current flows from the negative terminal to the (4) positive terminal, passing through all the other components of the circuit. This means that the (5) amount of energy passing through all the components in the series is the same. The main disadvantage of a series circuit is that when a single component in the path (6) burns out, the entire circuit stops operating (e.g. Christmas tree lights).



A **parallel circuit** consists of several paths connecting the different components. Each separate path is called a (7) branch of the circuit. Current from the source divides and flows through the different **branches**. Unlike series circuits, if one of the components in the parallel circuit **burns out**, the other paths (8) continue to operate. Parallel circuits are commonly used to connect (9) appliances at home, so that each **socket** can function independently. For example, you don't have to (10) turn off the light in your room for the TV socket to work.

For example, you don't have to (10) turn off