

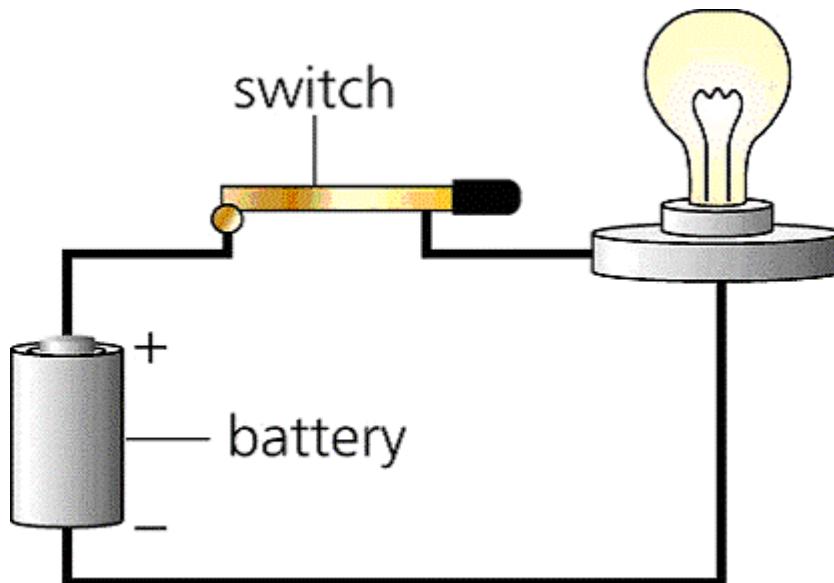
Student Revision Notes (age 11 – 14): Electrical Circuits

An **electric circuit** is the arrangement of conductors to provide a complete path through which electric current can flow from a supply current (e.g. a battery).

For an electric current to flow, we need two things:

- Something to make the electricity flow e.g. a battery or power pack
- A complete circuit.

The simplest electric circuit would be a loop of wire from one battery terminal to the other, but this would not make best use of the energy of the battery. The next simplest electric circuit would be to insert an electrical component, such as a light bulb. In the following diagram the light bulb works because there is a battery and complete circuit. To make the bulb go off a means of breaking the circuit and stopping the electric current is needed and this is achieved by inserting a switch in the circuit.



Series and parallel circuits

If you have a battery and two bulbs there are two ways of connecting them to make a circuit:

- (a) in **series** circuits - the bulbs are connected one after the other. In this circuit the current is the same at all points in the circuit (see Figure 1)

In a series circuit if a bulb breaks all the components stop working. If you put more lamps into a series circuit, the lamps will be dimmer than before. Series circuits are useful if you want a warning that one of the components in the circuit has failed.

(b) in **parallel** circuits - the bulbs are connected side by side. In this circuit the current splits at the junctions, some going one way and some the other (see Figure 2).

In a parallel circuit if a bulb breaks the components on different wires keep working. Unlike a series circuit, the lamps stay bright if you add more lamps in parallel. Parallel circuits are useful if you want everything to work, even if one component has failed, for example in our homes.

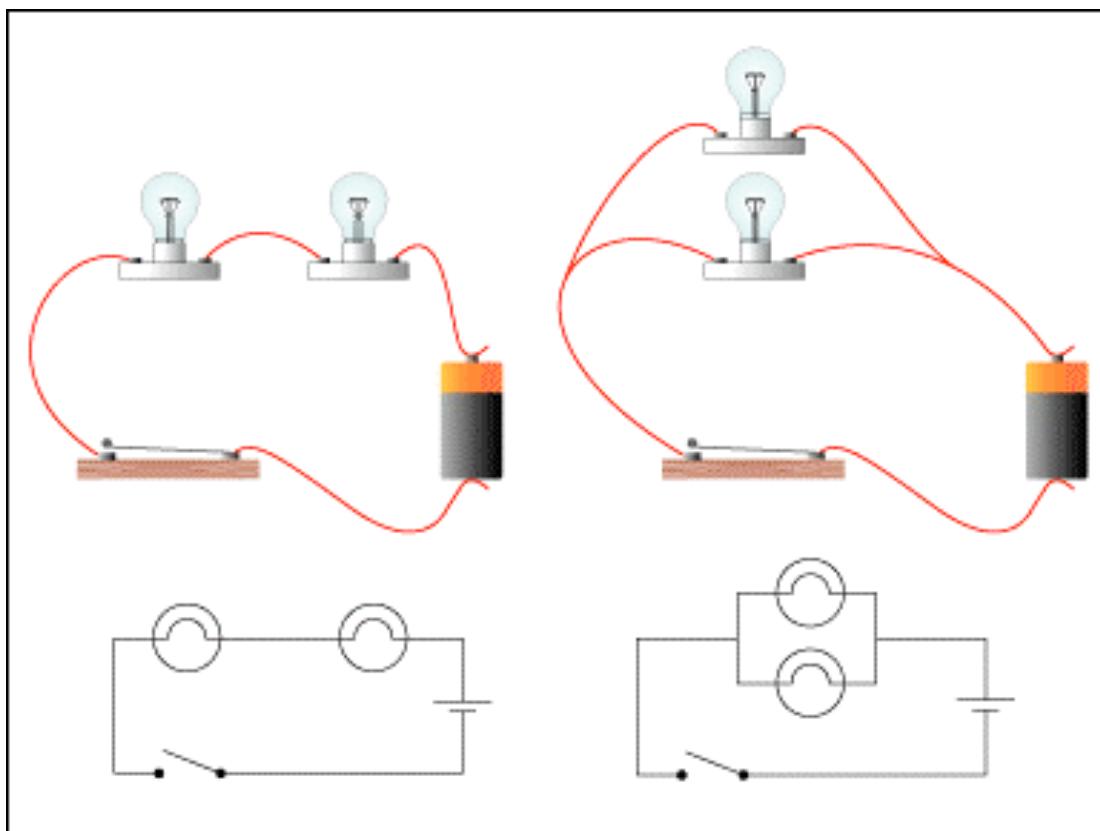


Figure 1

Figure 2

Linked Resources

www.twothirtyvolts.org:

Electrical Circuits (11-14) Student Quiz