

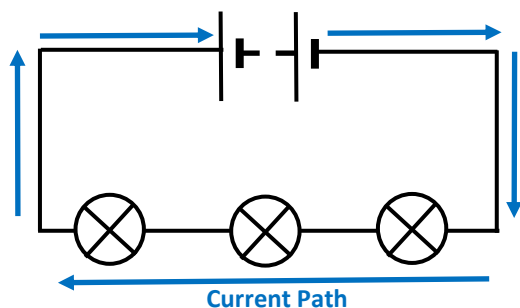
S2 Science—Circuit Theory

A **circuit** is a path in which electrical charge carriers (current) can move around.

There are two main types of circuit we can consider:

Series Circuit

A series circuit is a circuit where there is only **one path** for the current.

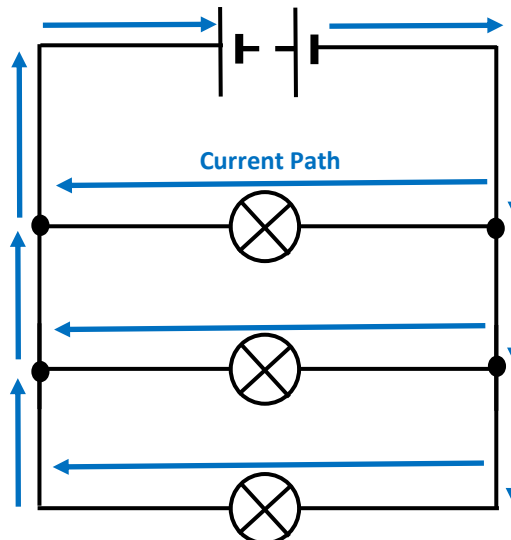


As you can see in the above diagram, the current path forms a continuous loop around the circuit.

Current in a series circuit is the same at all points.

Parallel Circuit

A series circuit is a circuit where there is **more than one path** for the current.



As you can see in the above diagram, the current takes different paths through the circuit.

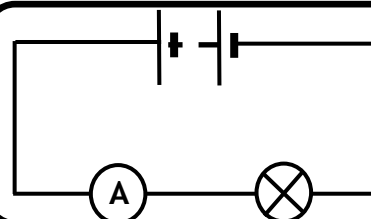
Current in a parallel circuit splits up - it is **not** the same at all points.

Measuring Current

To measure current, we use a device called an ammeter.

Current is measured in units called **Ampères** or A for short.

The circuit symbol for an ammeter is:



An ammeter measuring the current through a bulb.

Task

1) Draw out the following circuits, either on paper or using an online package (link at bottom of page).

- A series circuit with a battery, bulb, and electric motor.
- A parallel circuit with a battery, bulb, and electric motor.
- A series circuit with a battery, two bulbs, and an ammeter measuring the current through one of the bulbs.
- A parallel circuit with a battery, two bulbs, and an ammeter measuring the current through one of the bulbs.

2) There is a battery and two bulbs connected in a series circuit. Just after leaving the battery, the current is measured at 2A. What would the current be measured as after the second bulb?

Online circuit builder (Note, not all circuit symbols will be the same):

https://phet.colorado.edu/sims/html/circuit-construction-kit-dc/latest/circuit-construction-kit-dc_en.html