
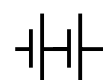
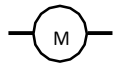
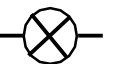
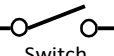
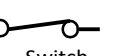

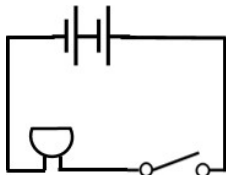
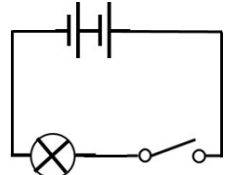
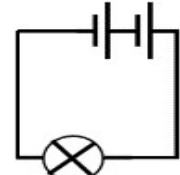


Key Vocabulary	
Voltage	The force moving the electric current through wires in a circuit.
Volts	How voltage is measured.
Current	The flow of electrons through a circuit.
Amps	How current is measured.
Resistance	The slowing effect on the movement of electrons around a circuit (caused by components and wires)
Electrons	Parts of an atom that can move – these are what move through a circuit.

Component symbols and circuit diagrams

						
Cell	2 cell battery	Motor	Bulb	Switch open	Switch closed	Buzzer

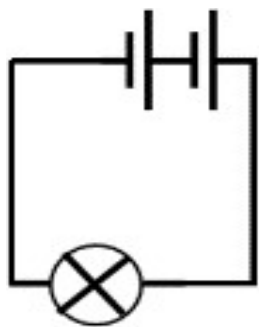
 2 cell battery powering a buzzer. Buzzer off as switch is open.	 2 cell battery powering a light bulb. Bulb off as switch is open.	 2 cell battery powering a light bulb. Bulb on as circuit is complete.
--	--	--

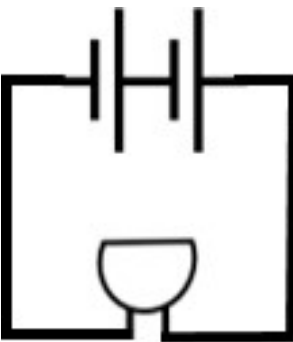
- I can:
- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
 - compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
 - use recognised symbols when representing a simple circuit in a diagram.

Brighter or louder?

How can we make this bulb brighter?

- More batteries = higher voltage = more power around circuit
- Shortening the wires = smaller path = less resistance to flow through



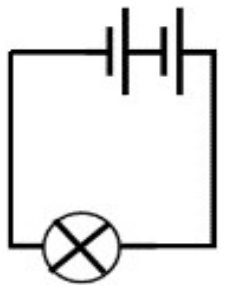


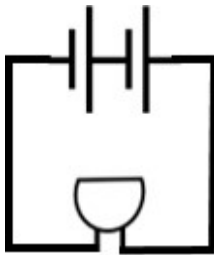
Challenge...
How can we make the buzzer louder?

Dimmer or quieter?

What changes to these circuits will make the bulb dimmer, or the buzzer quieter?

- Remove batteries = less voltage = less power to flow through the circuit.
- More buzzers or more bulbs = power shared between more components = greater resistance = less power to each component.
- Longer wires = more distance to travel = greater resistance = less power.





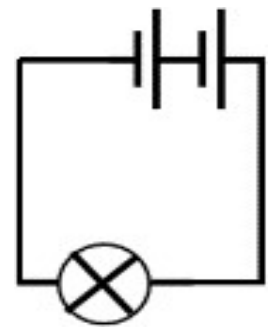
Series circuits

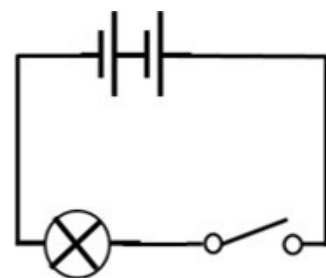
All of the circuits in this knowledge organiser are examples of series circuits.

A series circuit = only one route for flow of electrons to take.

As more components are added, the more the power (voltage) has to be shared.

Any breaks in a circuit (e.g. switch / broken component) prevent the current from flowing around the circuit.





This prevents all components in the circuit from working.

If you have a series circuit containing 200 lights, and one light bulb is broken, then whole set of lights will remain off until the break in the circuit is fixed.

Quiz

Question 1

What name do we give the force that moves an electric current through wires and components in a circuit?

- a) Volts
- b) Voltage
- c) Current
- d) Electrons

Question 2

What component is this the symbol for?

- a) Closed switch
- b) Open switch
- c) Cell
- d) Buzzer



Question 3

Which of the following could be done to increase the brightness of a bulb in a series circuit?

- a) Remove batteries.
- b) Lengthen the wires.
- c) Add more bulbs.
- d) Shorten the wires.

Question 4

Which of the following could be done to decrease the volume of a buzzer in a series circuit?

- a) Add batteries
- b) Shorten the wires
- c) Adding some bulbs.
- d) Removing cells or batteries.

Question 5

What will this component do when added, like this, to a series circuit?

- a) Generate light
- b) Generate sound
- c) Rotate
- d) Break the circuit



Question 6

Why will the bulb not light up in this circuit?

- a) There are too many cells in the battery.
- b) The switch is closed so the electrons cannot pass through.
- c) The bulb is in the wrong way round.
- d) The switch is open, so there is a break in the circuit.

