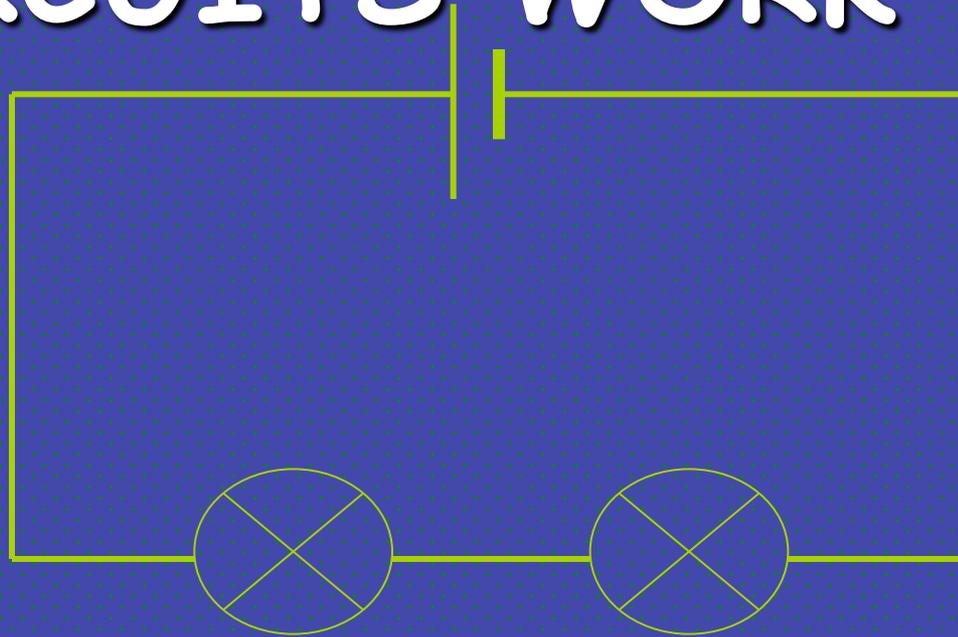
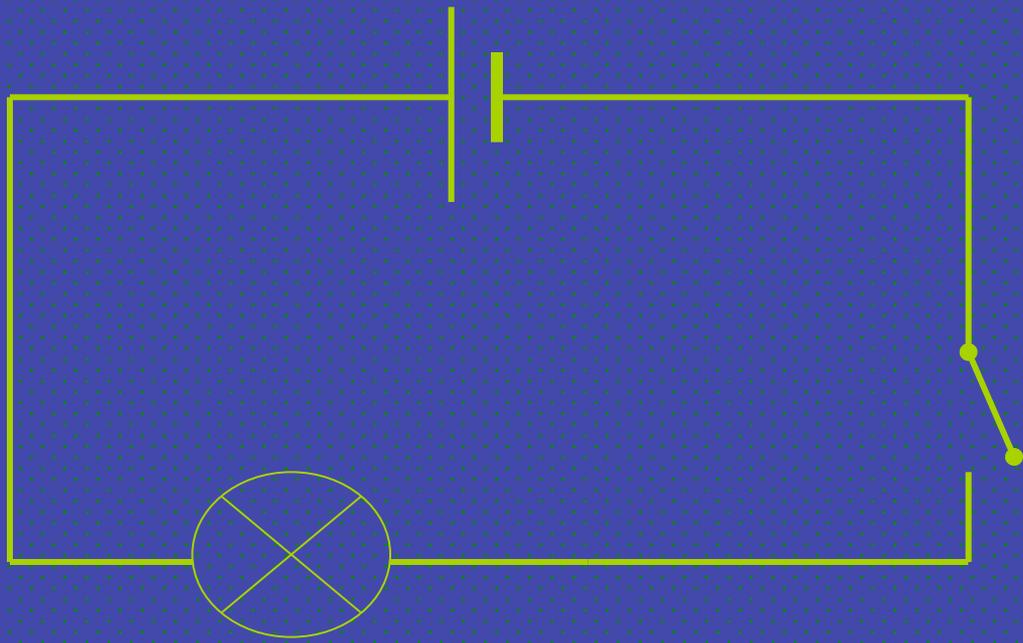
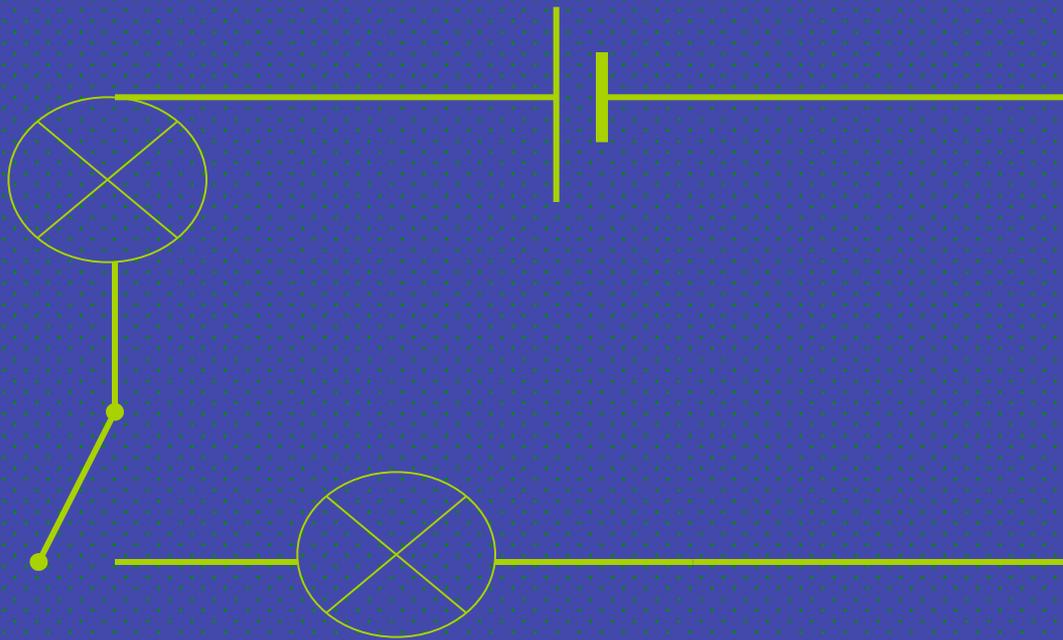


HOW ELECTRICAL CIRCUITS WORK

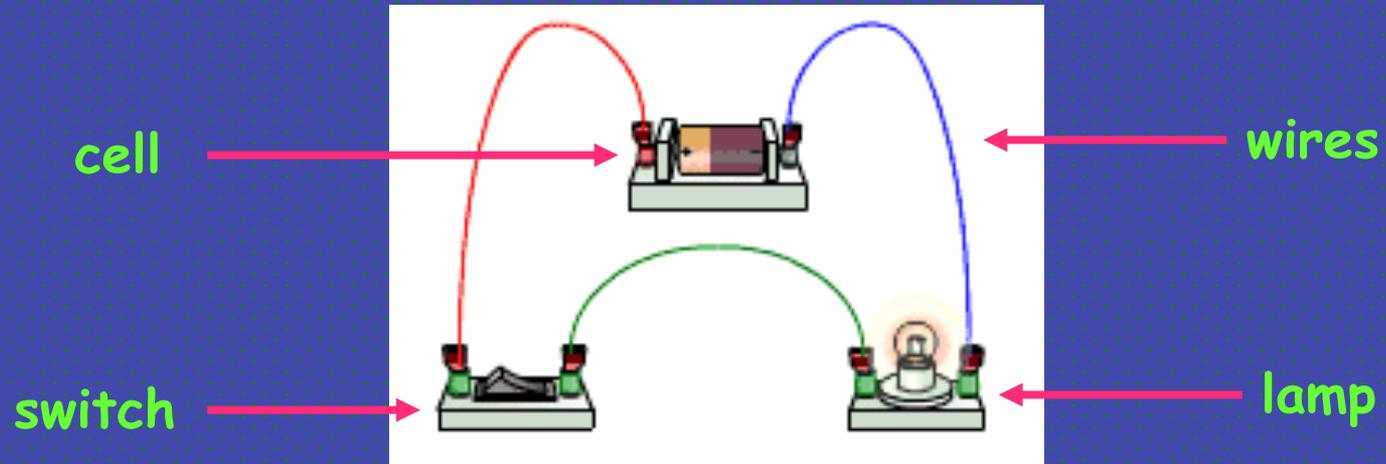






simple circuits

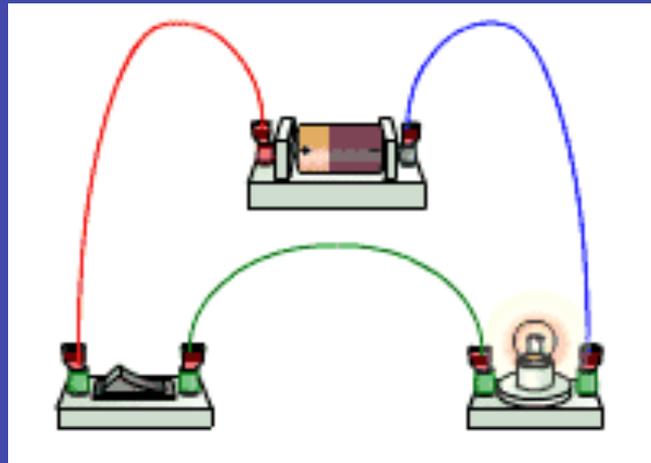
Here is a simple electric circuit. It has a cell, a lamp and a switch.



To make the circuit, these components are connected together with metal connecting wires.

simple circuits

When the switch is closed, the lamp lights up. This is because there is a continuous path of metal for the **electric current** to flow around.

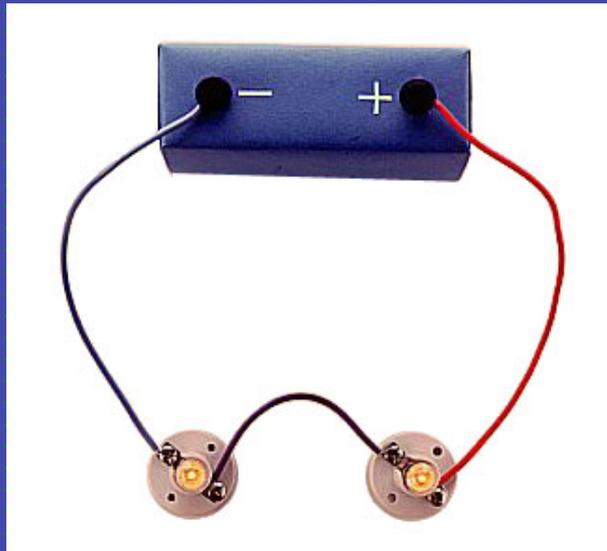


If there were any breaks in the circuit, the current could not flow.

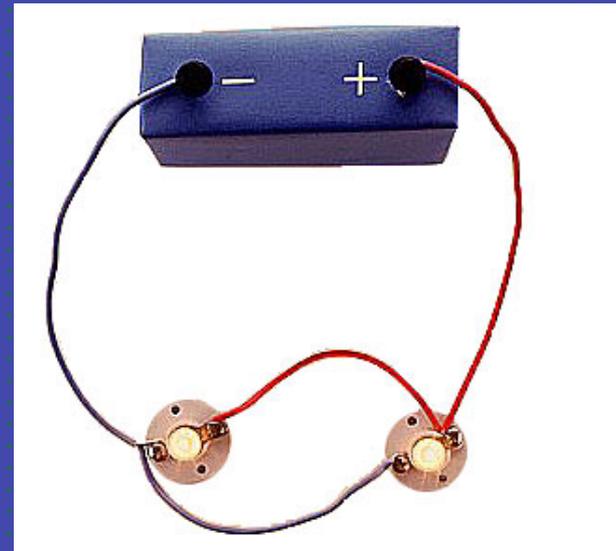
types of circuit

There are two types of electrical circuits;

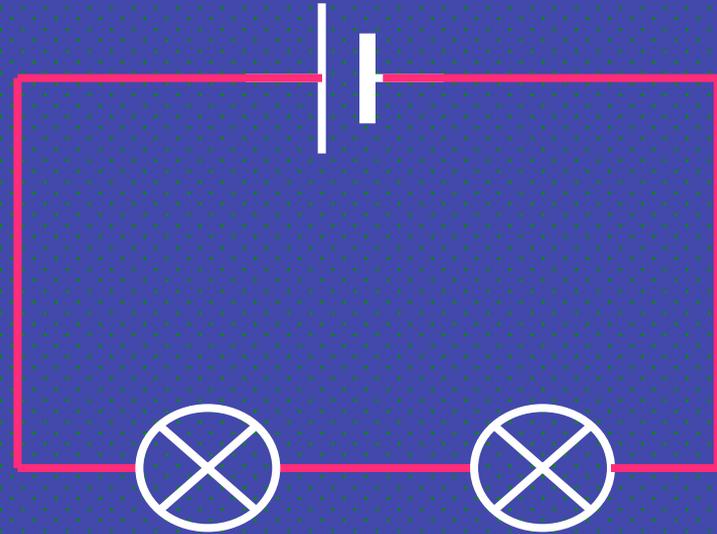
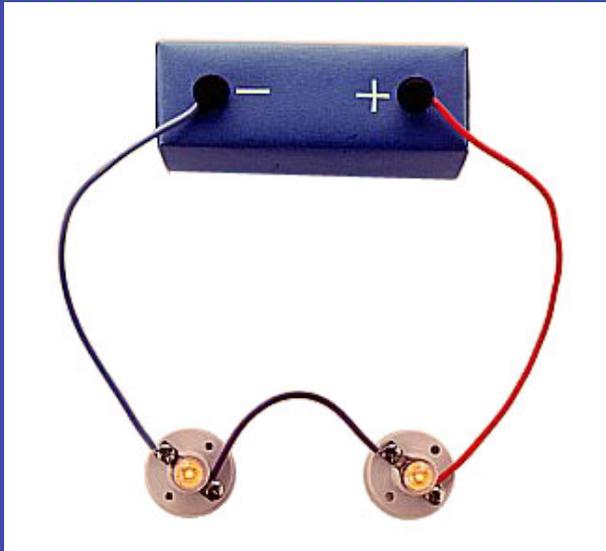
SERIES CIRCUITS



PARALLEL CIRCUITS



SERIES CIRCUITS

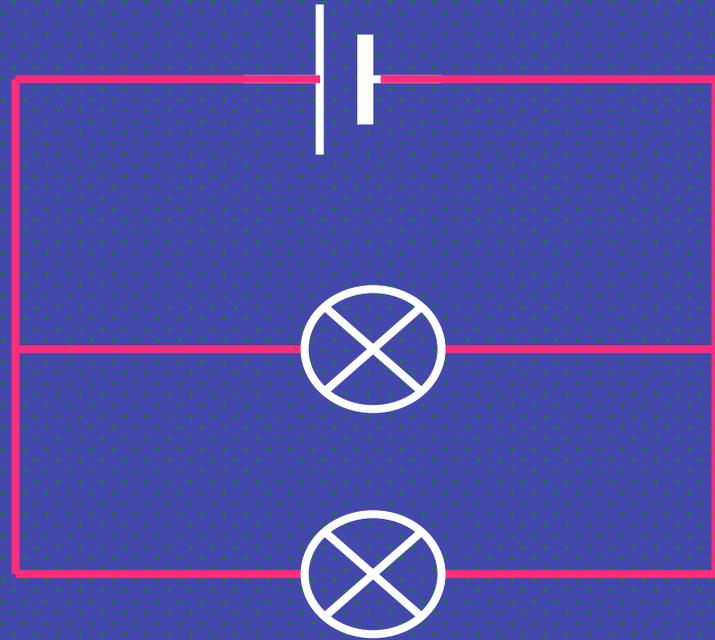
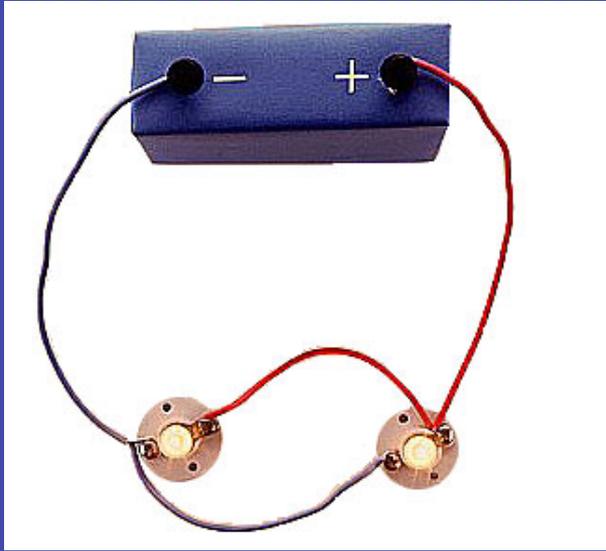


The components are connected end-to-end, one after the other.

They make a simple loop for the current to flow round.

If one bulb 'blows' it breaks the whole circuit and all the bulbs go out.

PARALLEL CIRCUITS



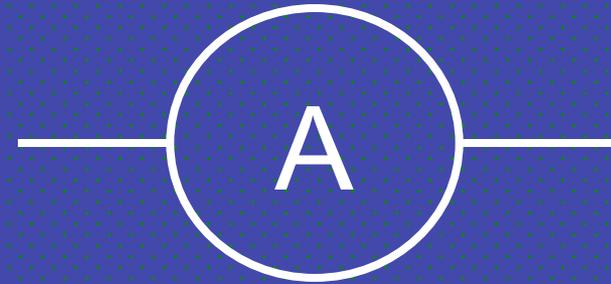
The components are connected side by side.

The current has a choice of routes.

If one bulb 'blows' there is still a complete circuit to the other bulb so it stays alight.

measuring current

Electric current is measured in **amps** (A) using an ammeter connected in series in the circuit.

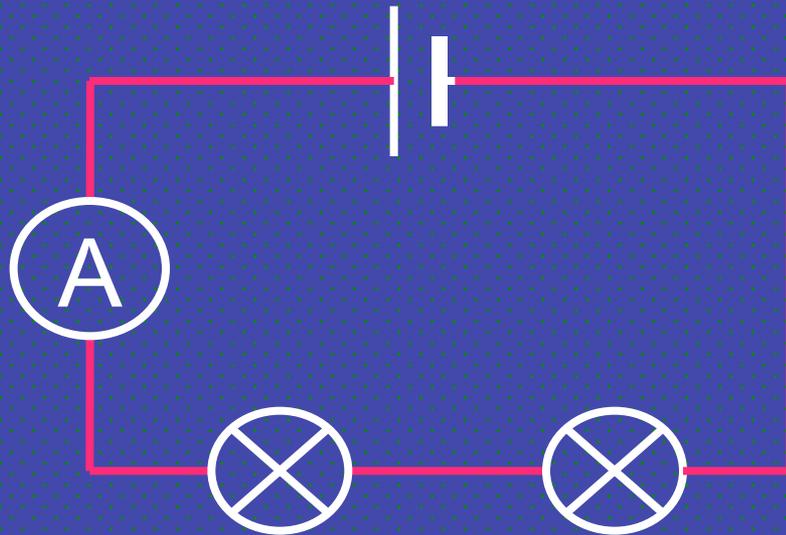


measuring current

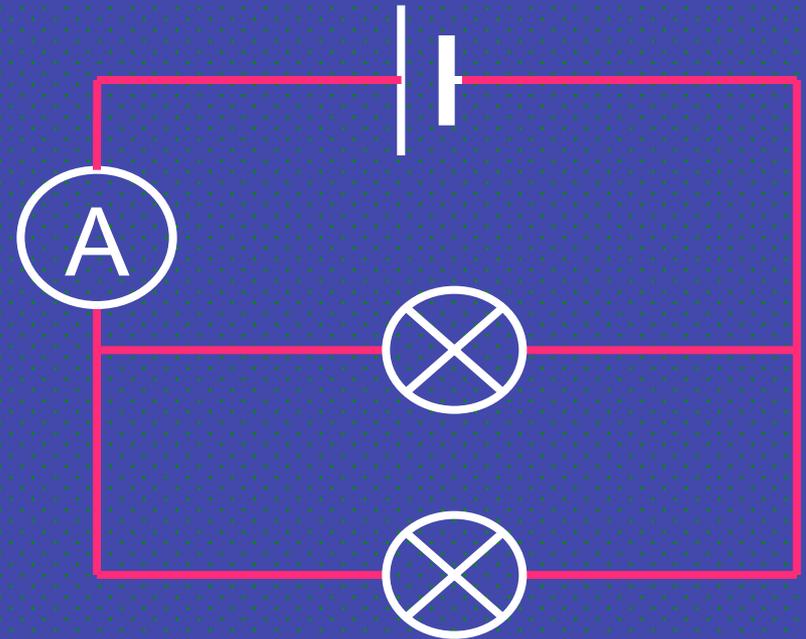
- Ammeter
 - Measures how much electrical charge is flowing around a circuit.
 - Current is given the letter “I” and measured in Amps (symbol A)

measuring current

This is how we draw an ammeter in a circuit.



SERIES CIRCUIT

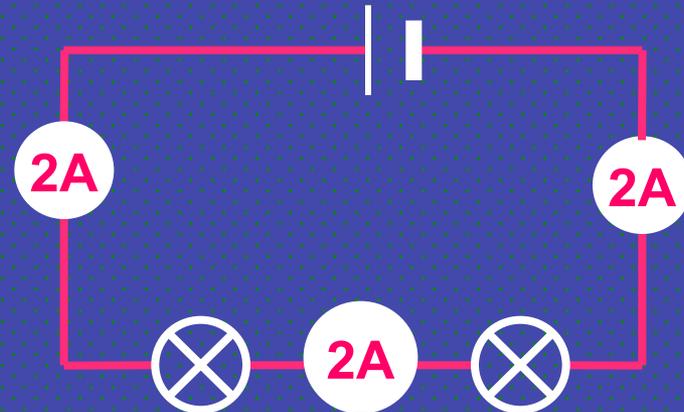


PARALLEL CIRCUIT

measuring current

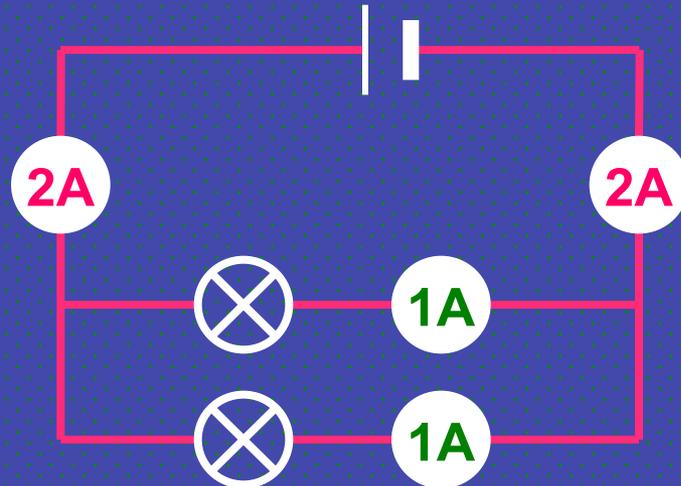
SERIES CIRCUIT

- current is the **same** at all points in the circuit.

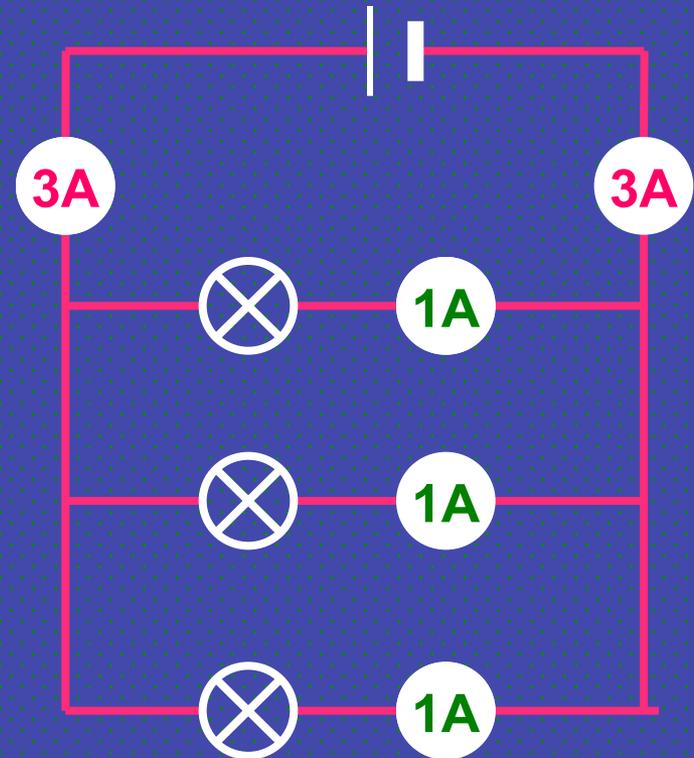
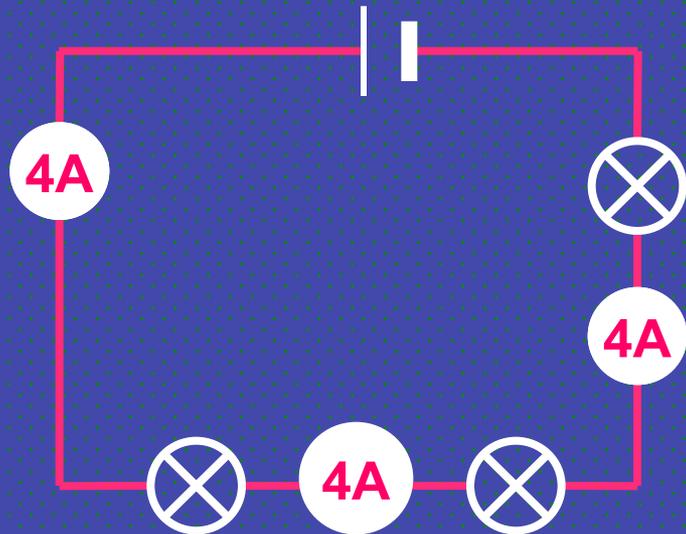


PARALLEL CIRCUIT

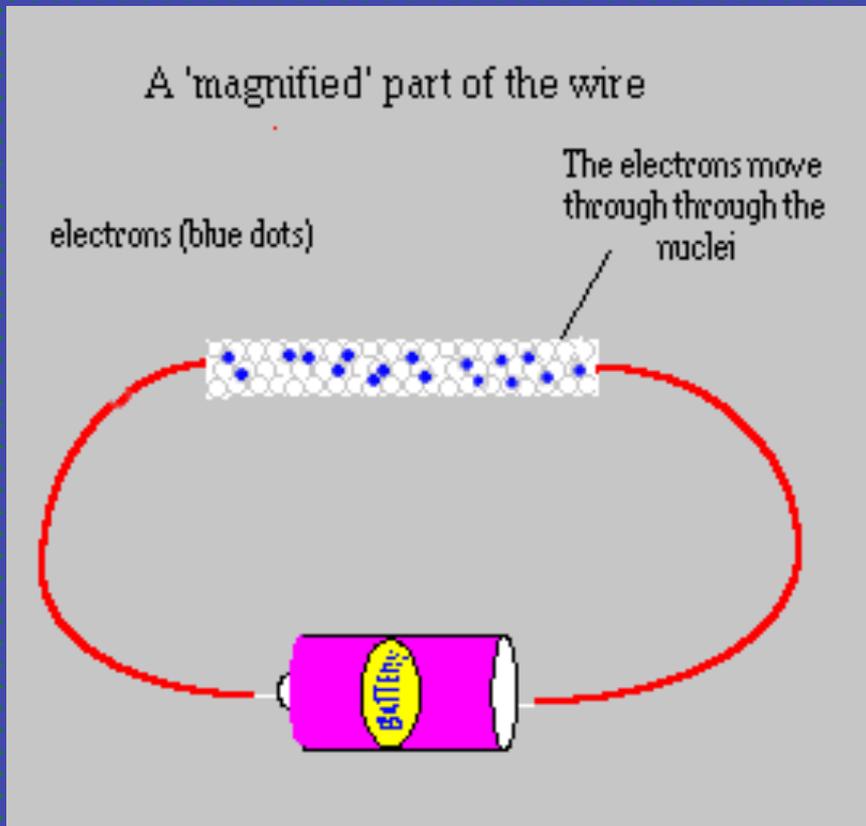
- current is **shared** between the components



copy the following circuits and fill in the missing ammeter readings.



Voltage

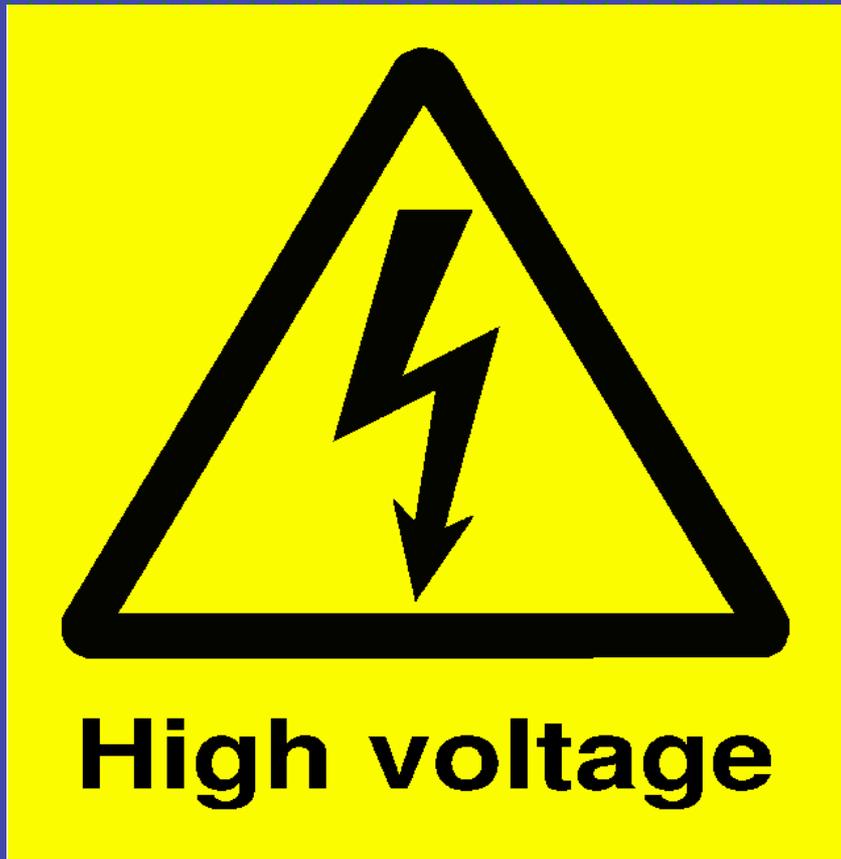


- The electron travels around the atom at a very high rate of speed. When the electrons move from one atom to the next, the energy created is called voltage.

VOLTAGE

- Voltage is a measure of how much energy the current has.
- Voltage is measured in VOLTS with a volt meter

Voltage / potential difference(p.d.)



- Voltage is a measure of the **energy** carried by the current.
- (Technically it is a measure of the difference in energy between two points – hence the name **potential difference**).

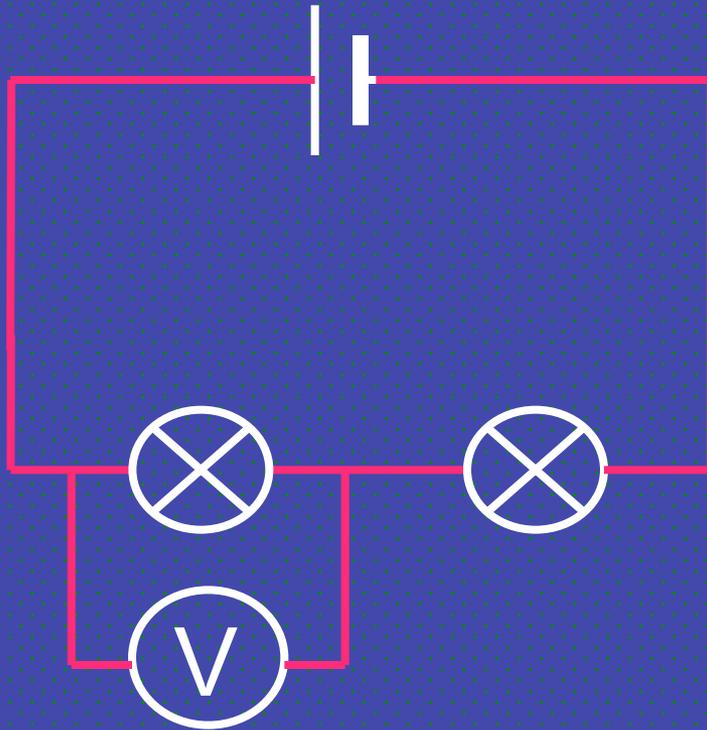
measuring voltage

The 'electrical push' which the cell gives to the current is called the **voltage**. It is measured in **volts (V)** on a **voltmeter**

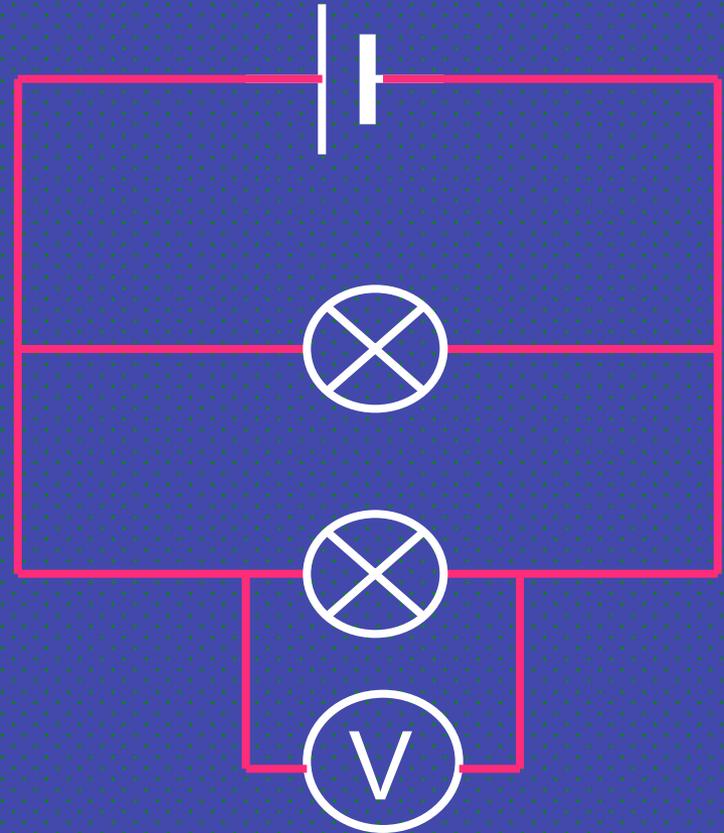


measuring voltage

This is how we draw a voltmeter in a circuit.

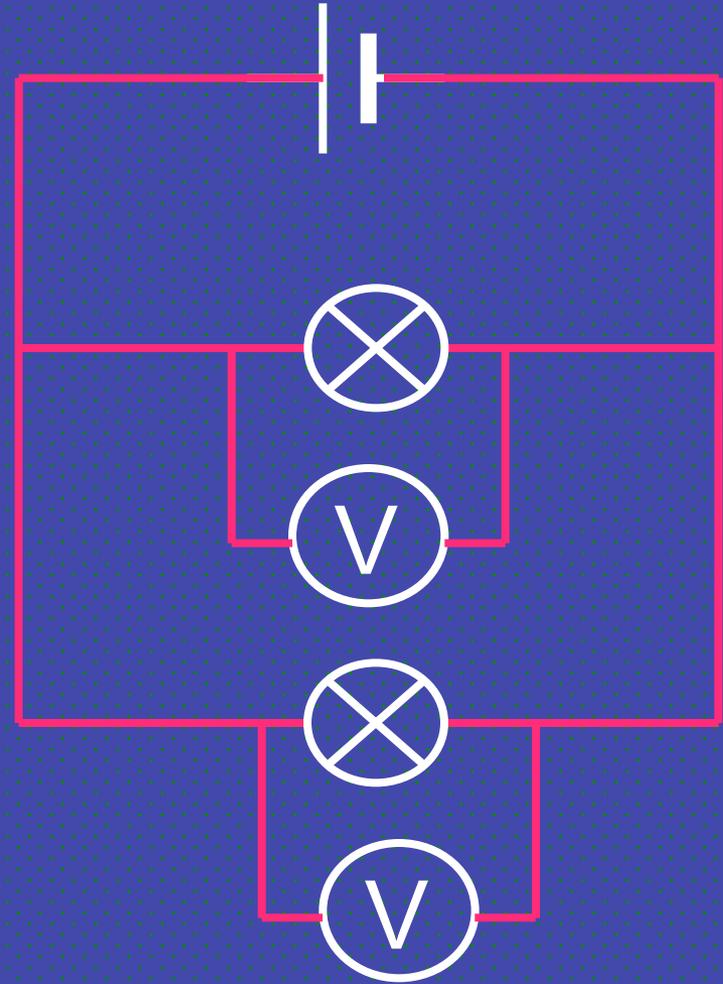
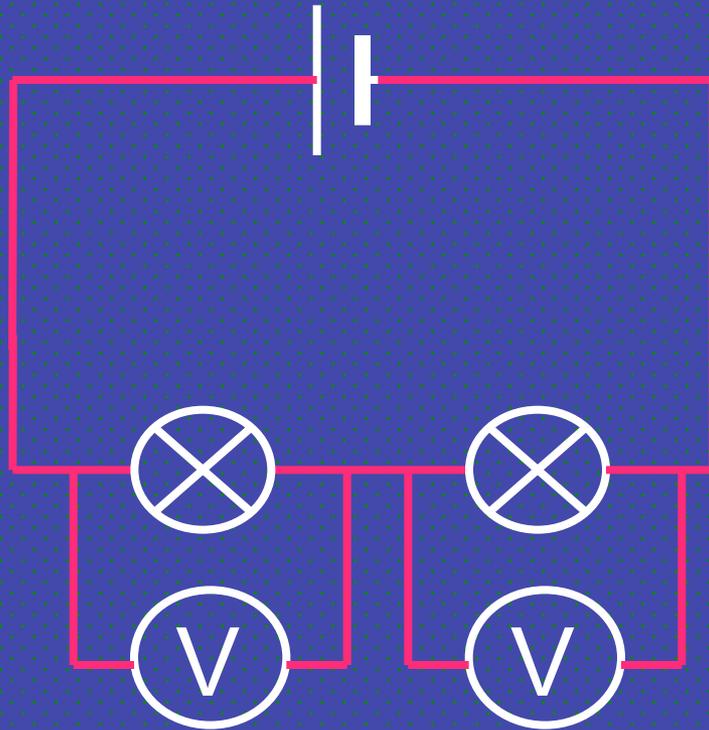


SERIES CIRCUIT



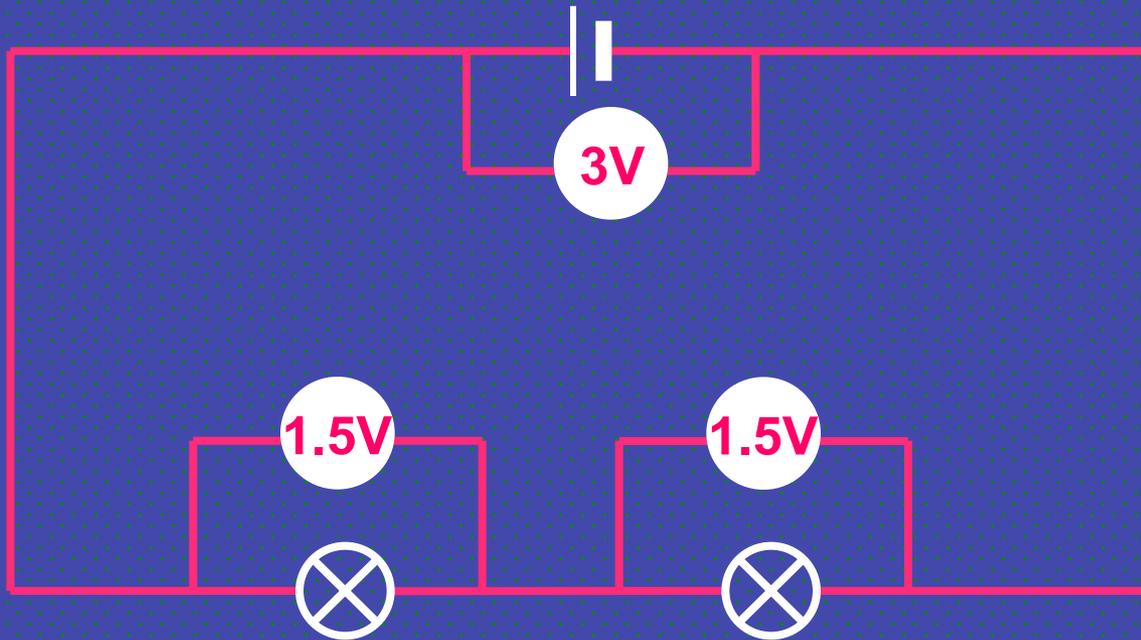
PARALLEL CIRCUIT

measuring voltage



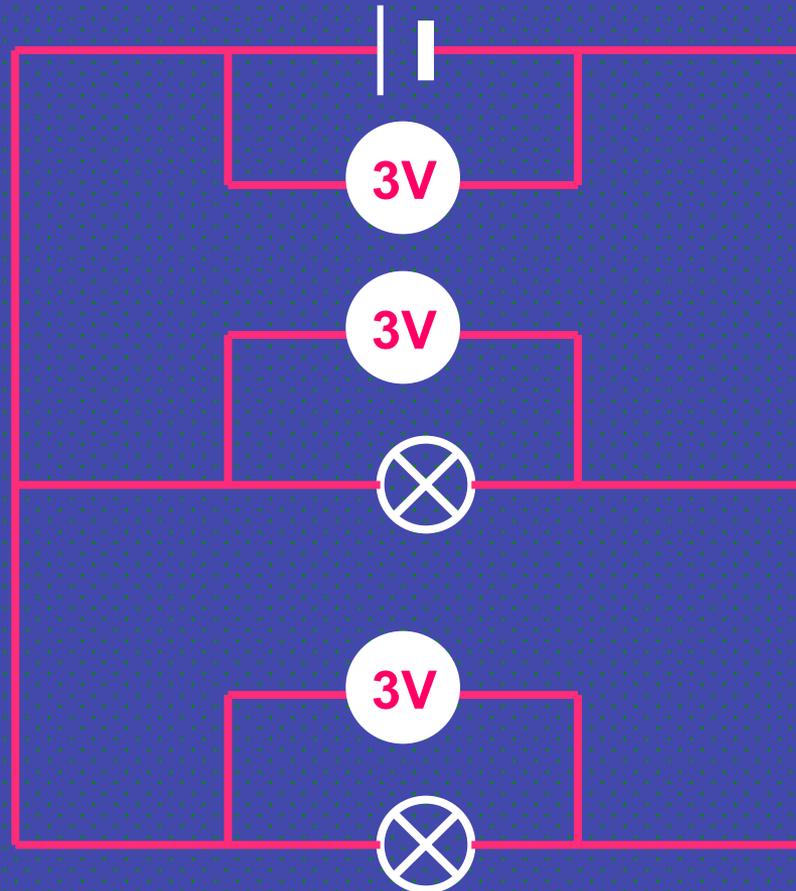
series circuit

- voltage is shared between the components



parallel circuit

- voltage is the **same** in all parts of the circuit.



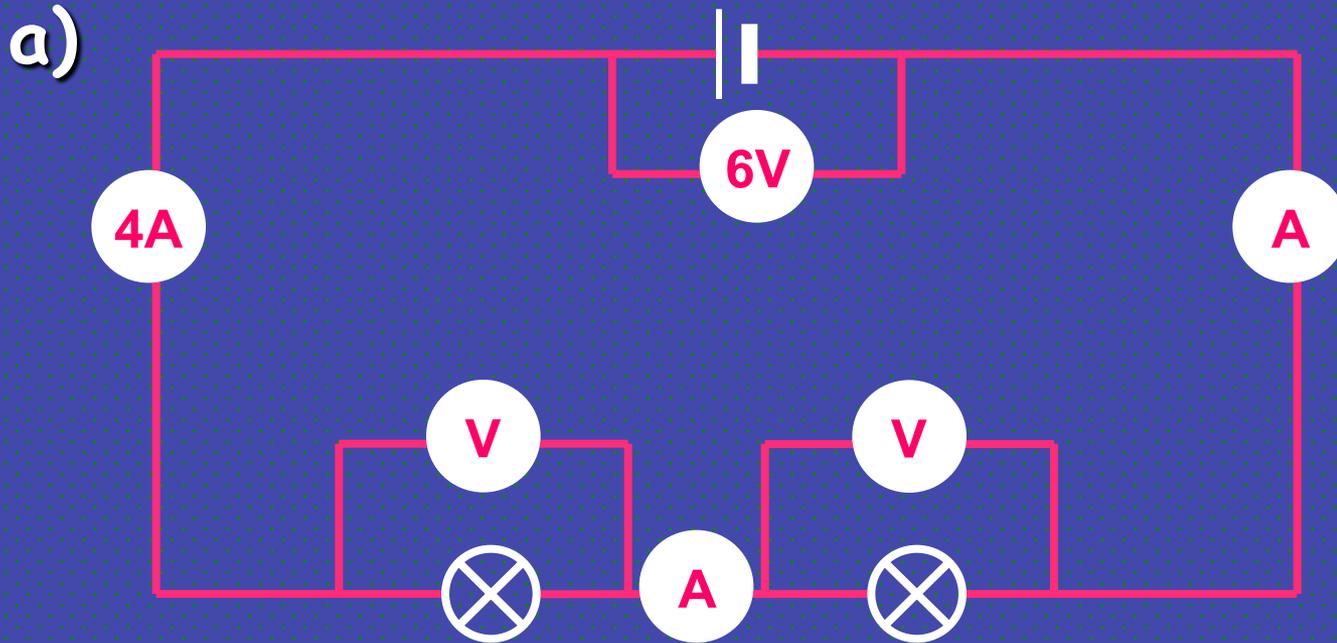
measuring current & voltage

copy the following circuits on the next two slides.

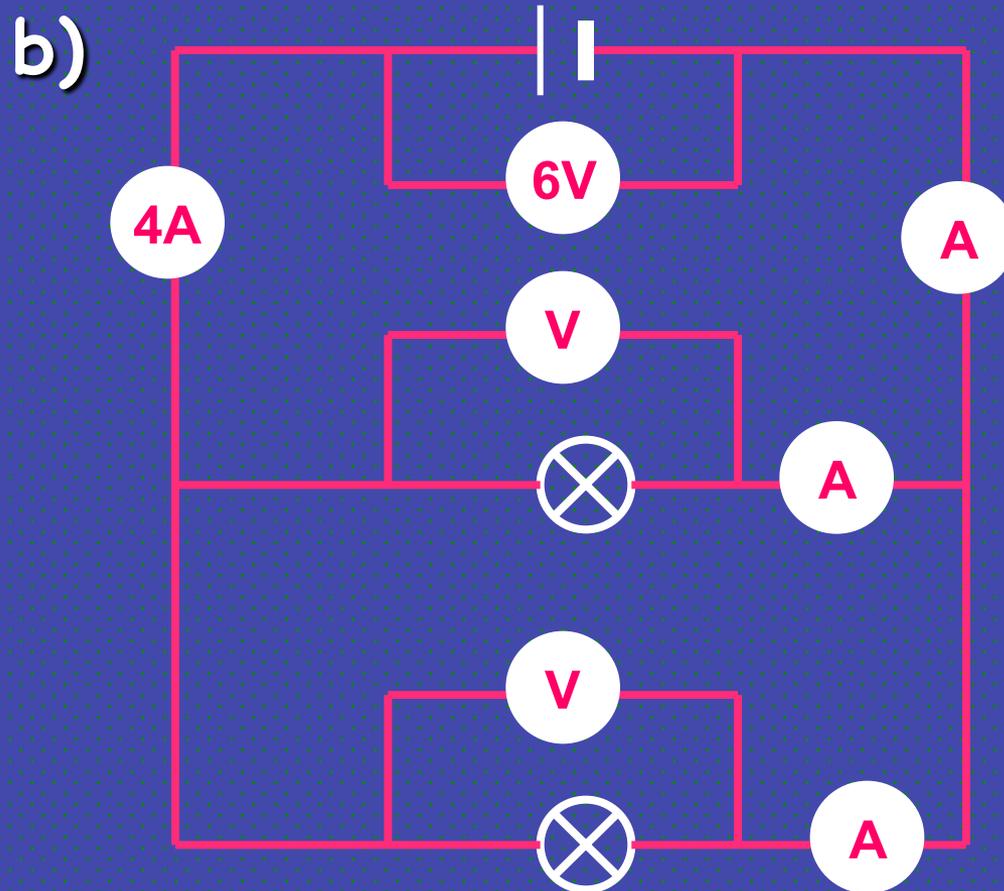
complete the missing current and voltage readings.

remember the rules for current and voltage in series and parallel circuits.

measuring current & voltage

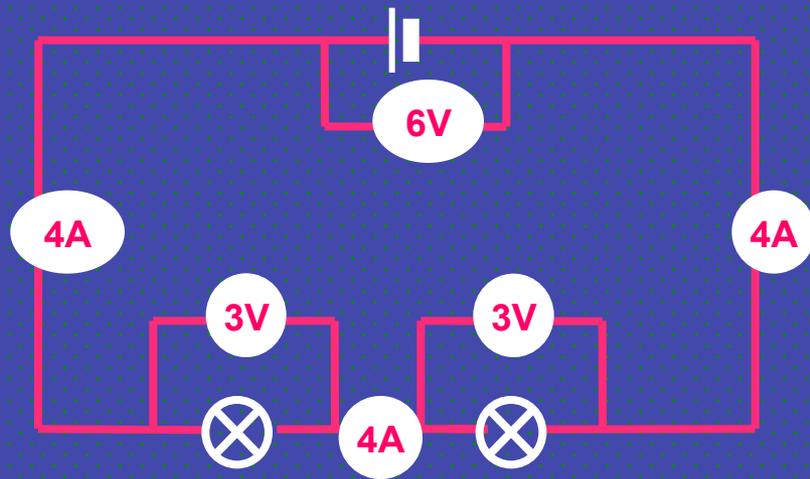


measuring current & voltage



answers

a)



b)

