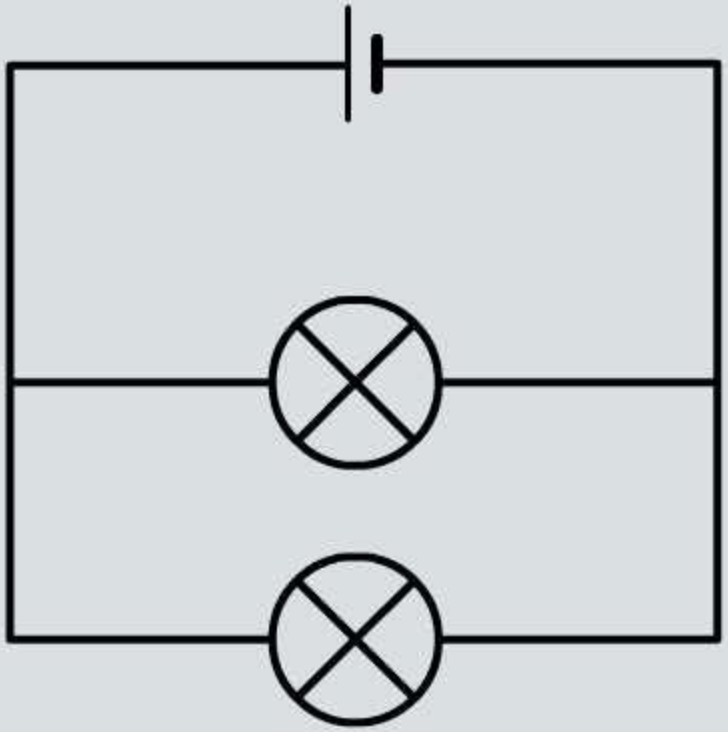
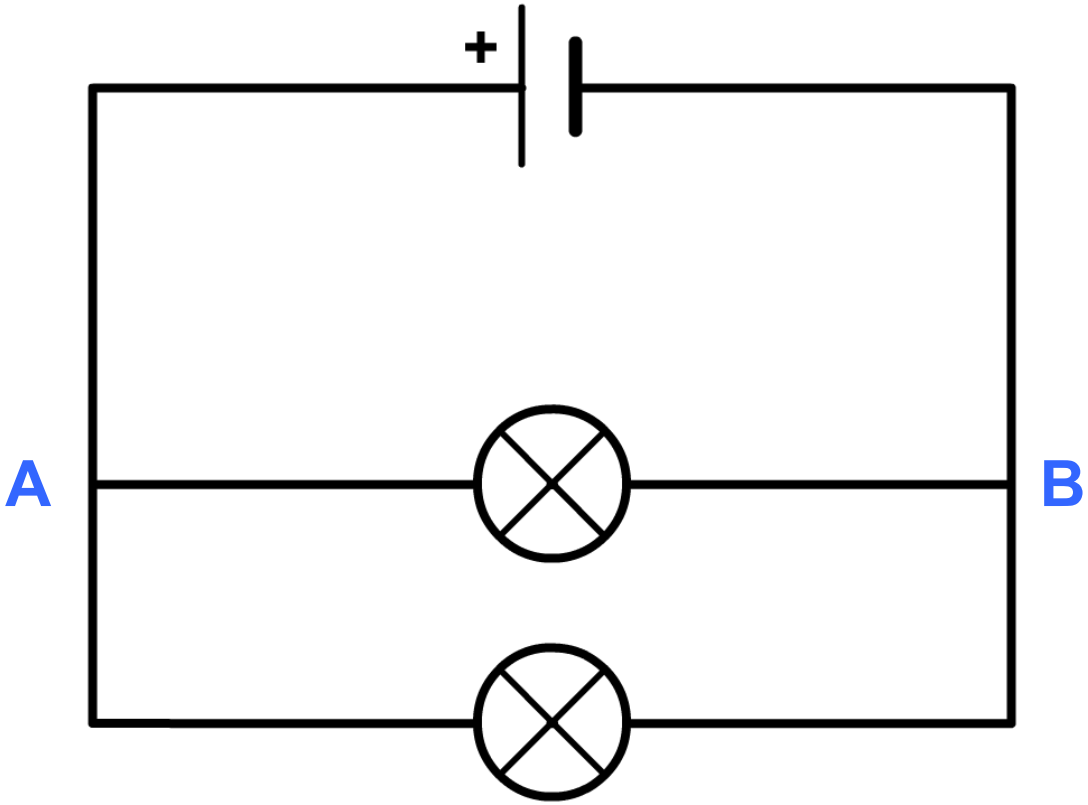
Parallel Circuits



What is a parallel circuit?

A **parallel** circuit is one that contains a point (a junction) where the current can **split** (point A) or **join** (point B).

This means that there is more than one path around the circuit.

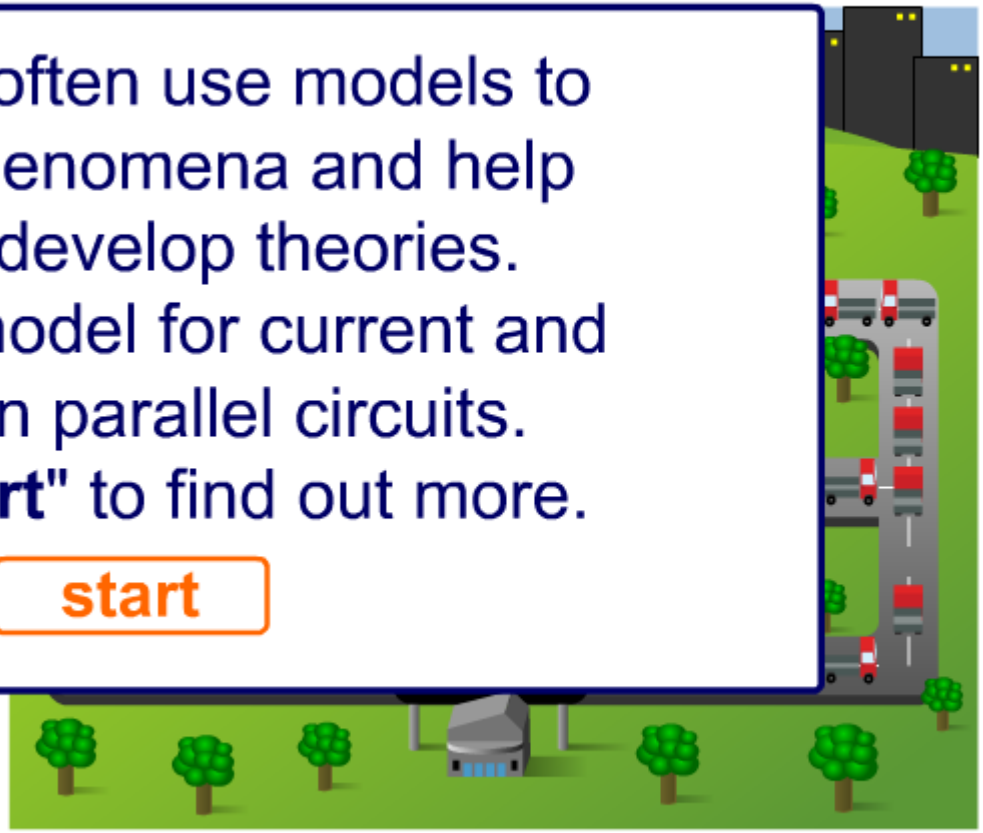


Modeling parallel circuits

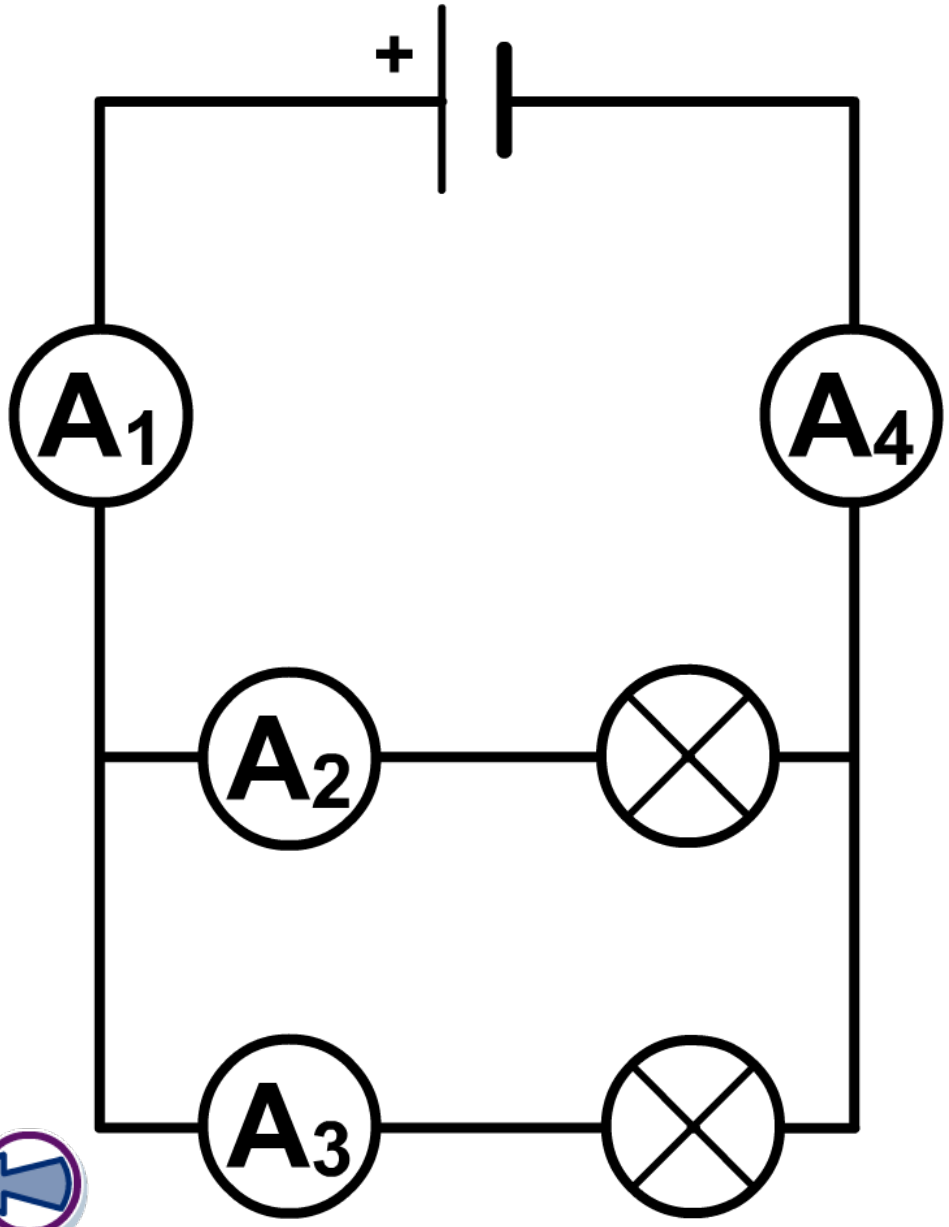
Current and voltage in a parallel circuit

Scientists often use models to explain phenomena and help them to develop theories.
Here is a model for current and voltage in parallel circuits.
Press "**start**" to find out more.

start



Measuring current in a parallel circuit



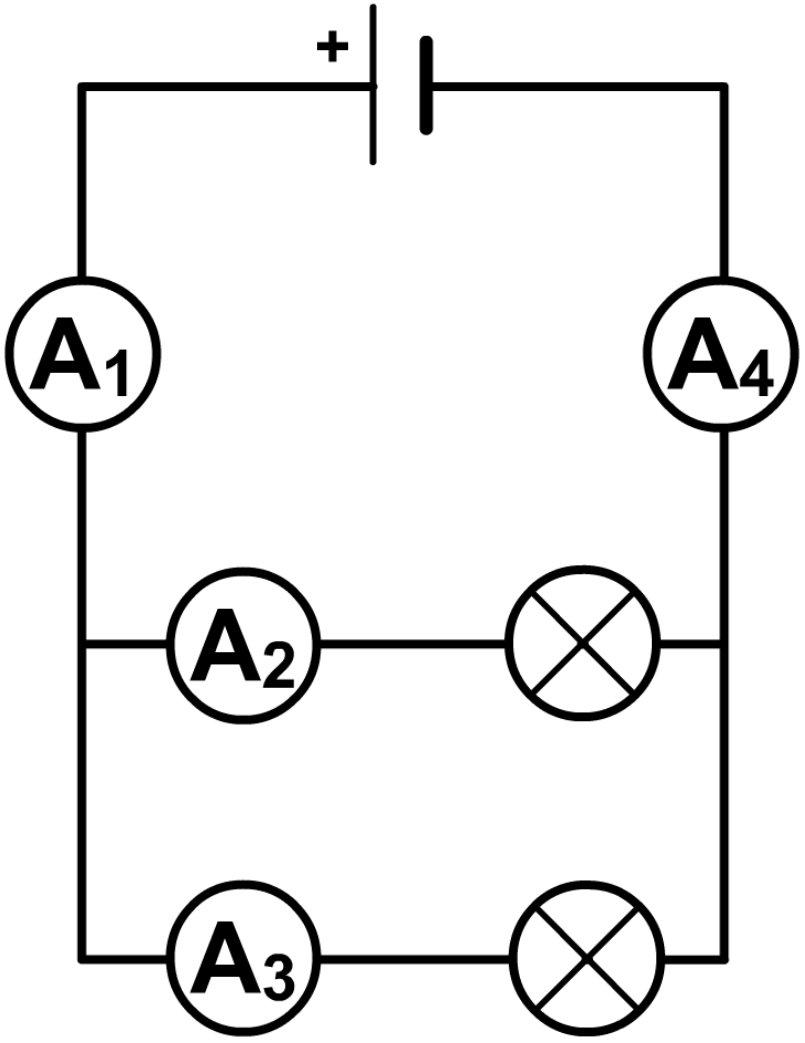
1. Set up the circuit as shown.

2. Place an ammeter, in turn, at positions 1, 2, 3 and 4 and record the readings in a table.

Ammeter	Current (A)
A_1	
A_2	
A_3	
A_4	

Current in a parallel circuit

In a parallel circuit, the current that leaves the cell is the same as the current that returns to the cell.

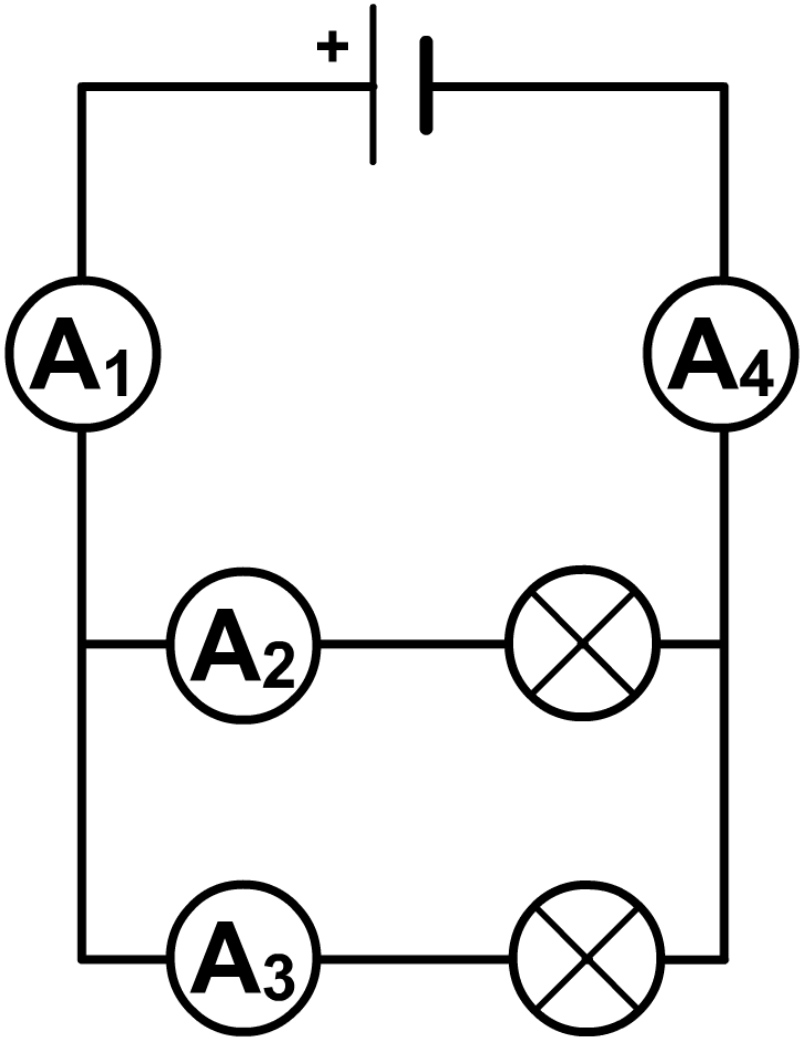


The ammeter readings for A1 and A4 should be the same.

This is because the current does **not** get used up by the circuit, just the energy that the current is carrying.

Current in a parallel circuit

The current splits up at the first junction and then joins together at the second junction.

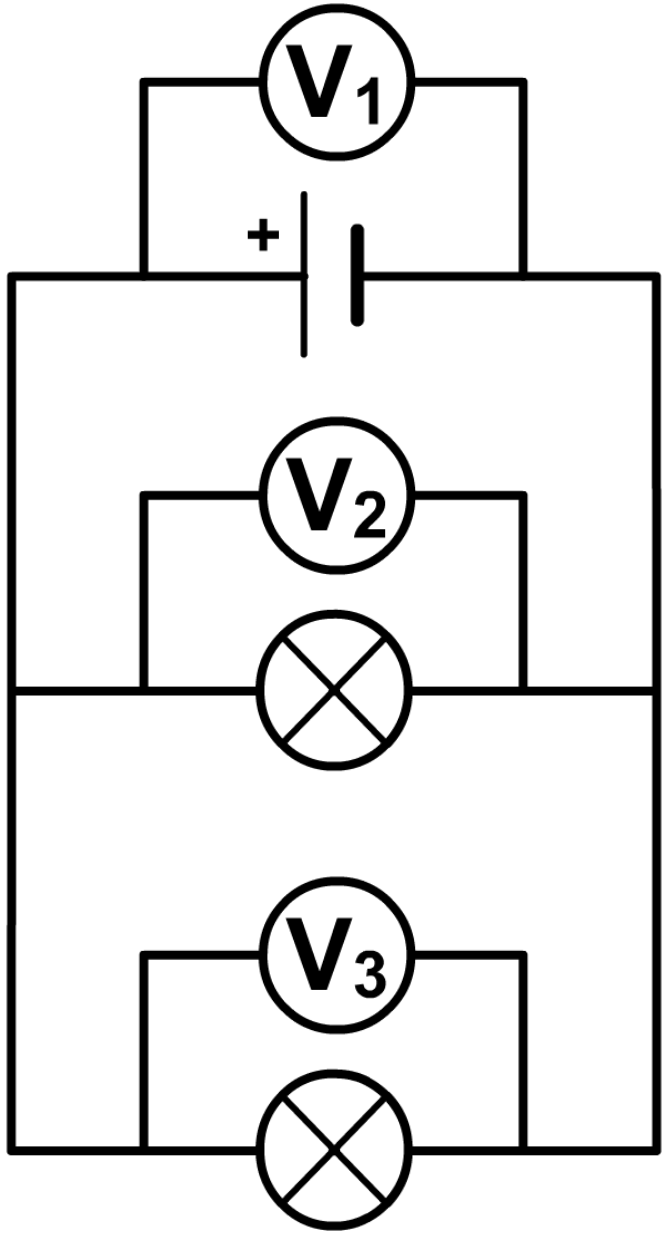


The following is always true for this type of parallel circuit:

$$A_1 = (A_2 + A_3) = A_4$$

If the bulbs are identical, then the current will split evenly. If the bulbs are not identical, then the current will not split evenly.

Measuring voltage in a parallel circuit



Connect up this circuit and measure, in turn, the voltage at V_1, V_2 and V_3. Record your results in the table.

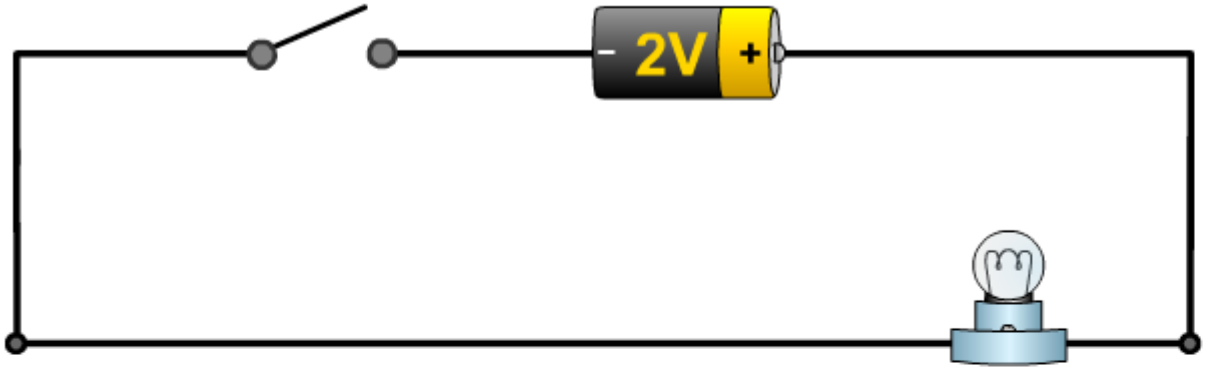
Voltmeter	Voltage (V)
V_1	
V_2	
V_3	

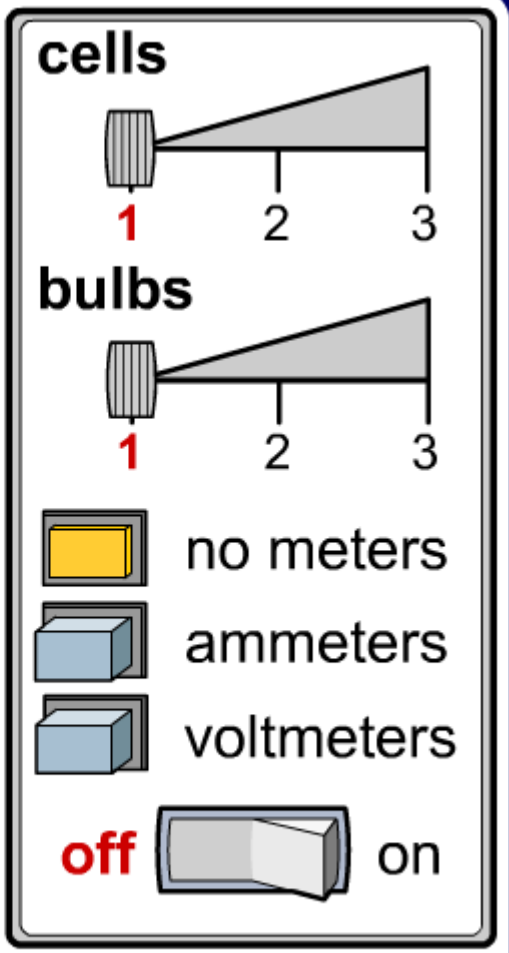
What do you notice about the results?

How can you explain this?

Make your own parallel circuit

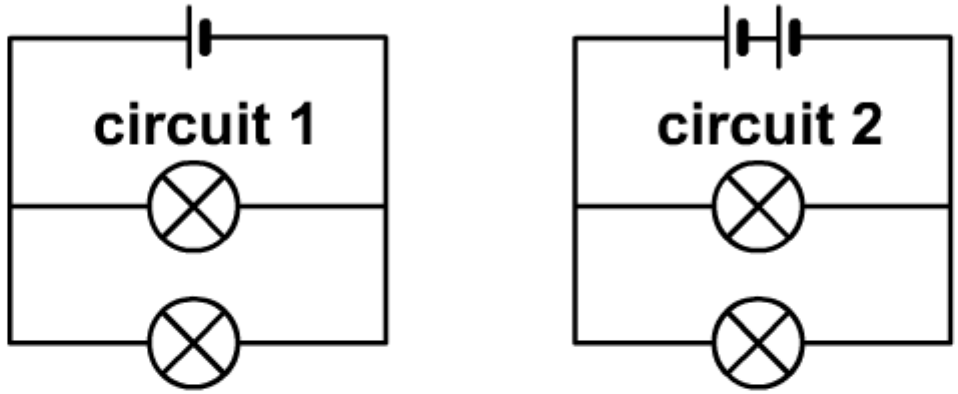
Investigating parallel circuits





Cells in a parallel circuit: summary

What are the missing words about cells in parallel circuits?



1. Increasing the number of cells [?] the total current flowing in a parallel circuit.

2. The voltage across each bulb [?] if more

solve

Series and parallel circuits: summary

What type of circuit do these statements relate to?

series circuits	parallel circuits

The supply current is split between the branches

solve