

Series and parallel circuits

Learning Objectives:

Know differences between **series** and **parallel** circuits.

Starter:

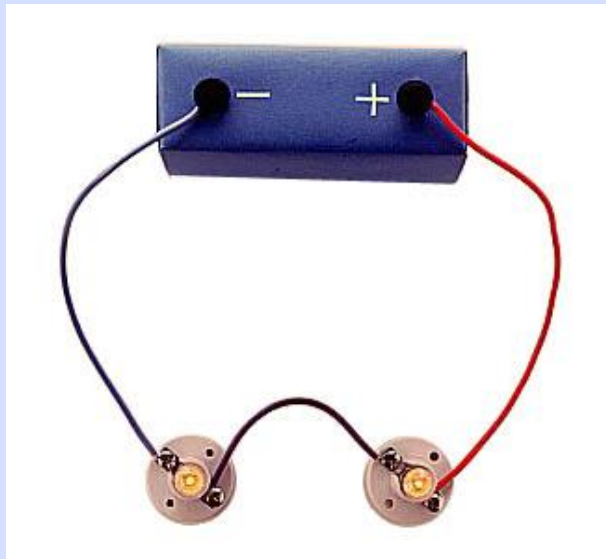
Match up the **symbols** with the **words** and **pictures of components**.

- How many can you get right (we **haven't** covered them all in class yet!)?!?!?

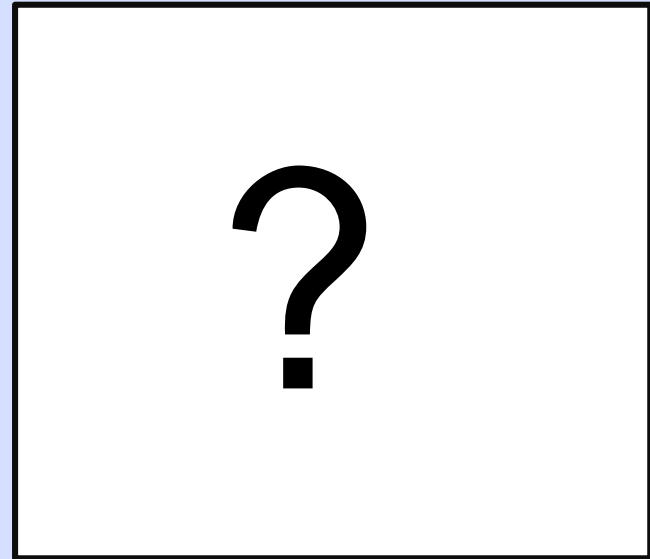
types of circuit

There are two types of electrical circuits;

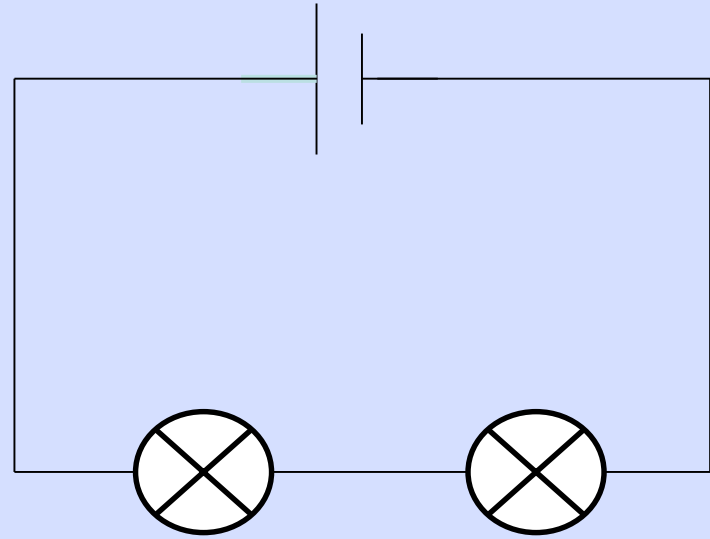
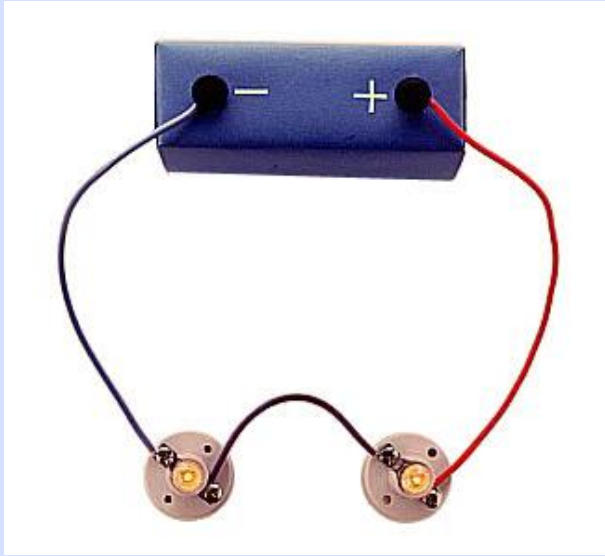
SERIES CIRCUITS



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.

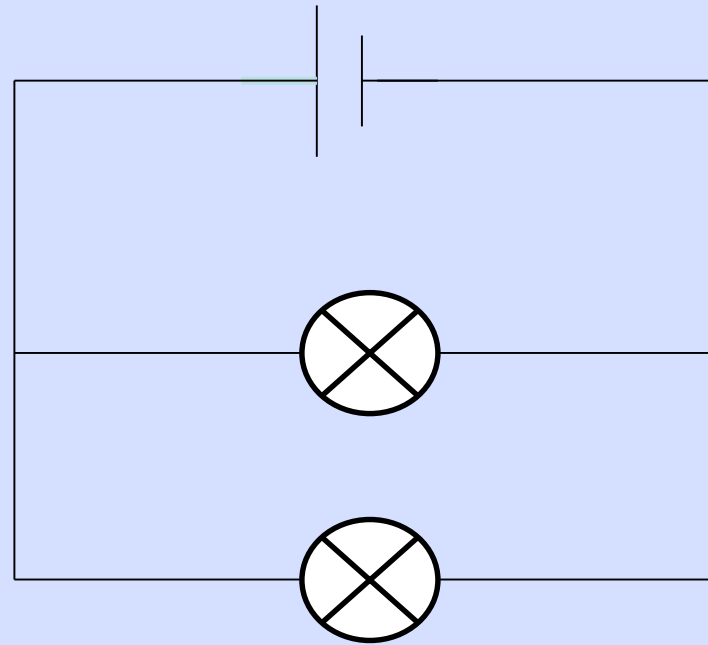
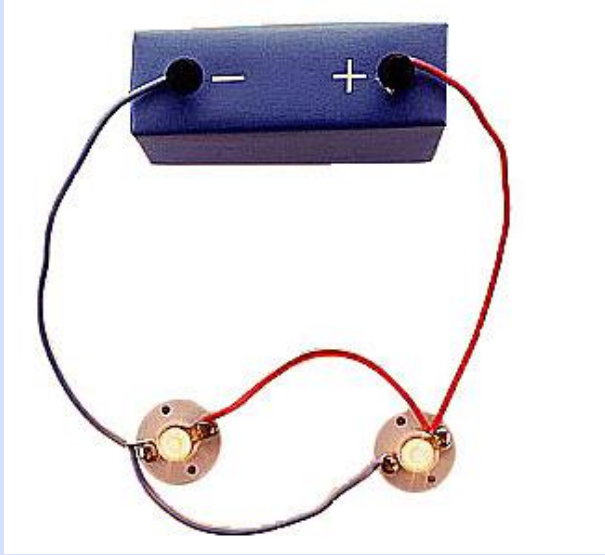
Construct a series circuit with two bulbs in it. What do you notice about the brightness of the bulbs? Are they all the same? Why do you think this is? What if you have three bulbs?

Now investigate to see if you can build a circuit with three bulbs but they must all have the same brightness? How are you going to do this?

In your circuit, unscrew one bulb. Do the other bulbs stay on or go off? Why do you think this is?

Can you construct a circuit in which all the bulbs stay on even if one is broken/unscrewed?

PARALLEL CIRCUITS



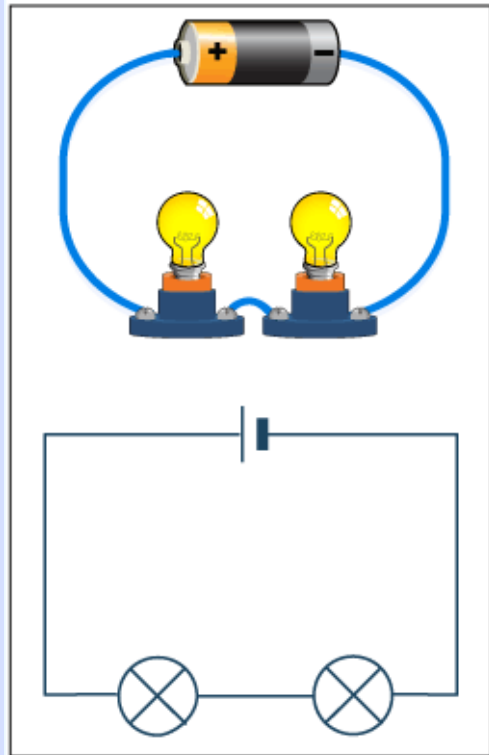
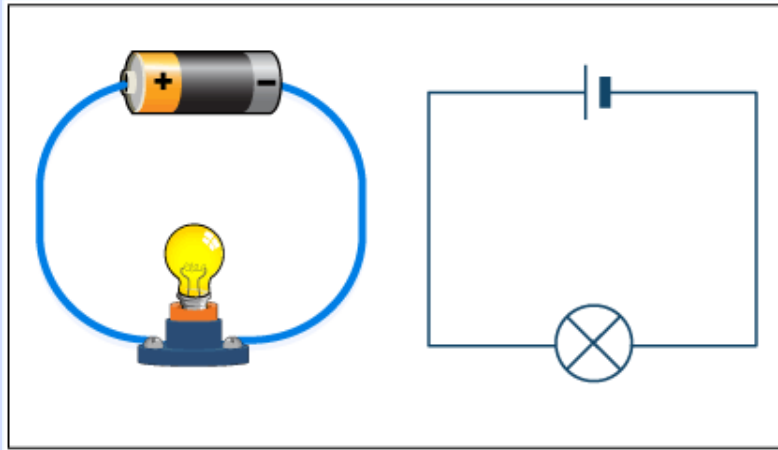
The components are connected side by side.

The current has a choice of routes (paths).

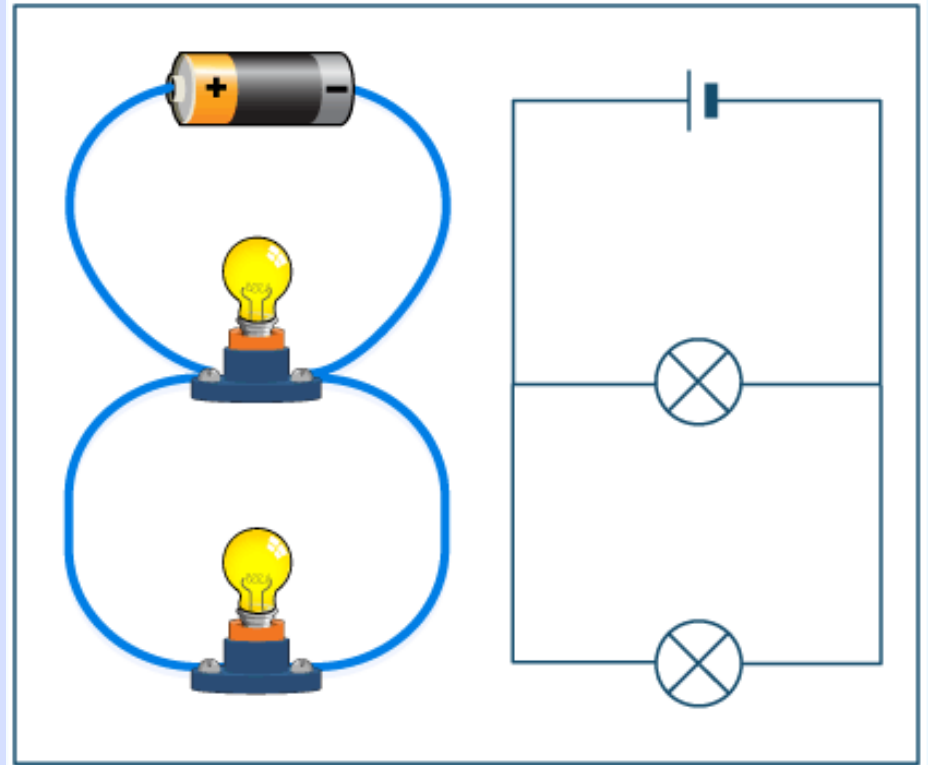
If one bulb 'blows' there would still be a complete circuit to the other bulb so it stays lit.

Have a go at building one.

Series circuit



Parallel Circuit



Wires need to be drawn with a ruler and must not cross each other.

<http://www.bbc.co.uk/learningzone/clips/series-and-parallel-circuits/10597.html>

In your books:

Draw a series and parallel circuit using the correct symbols.

Summarise the difference and explain why a parallel circuit might be better.

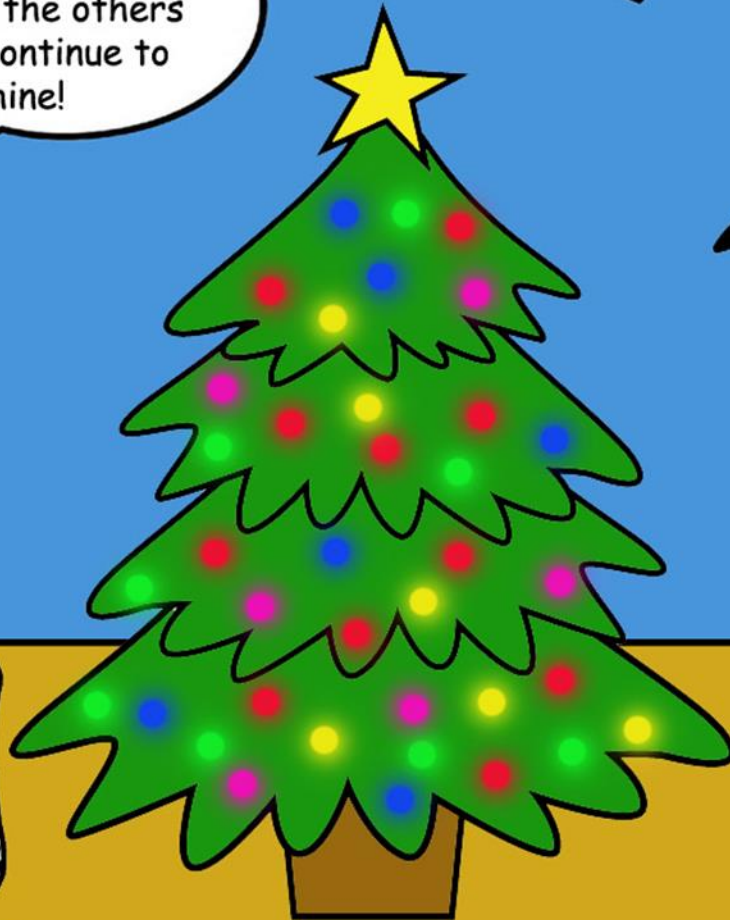
Stick in the concept cartoon and say whether you agree or disagree with each person and why.

If a bulb blows, the rest of the lights will go out!

I disagree. If one bulb blows then the others will continue to shine!

I think it depends how the bulbs are wired together.

We could see what happens by removing a bulb!



Extension: Series or parallel?

1. Would it be better to have the lights on a Christmas tree in series or parallel? Why?



2. Are the lights in your house connected up in series or parallel? How can you tell?

