5 Parallel circuits

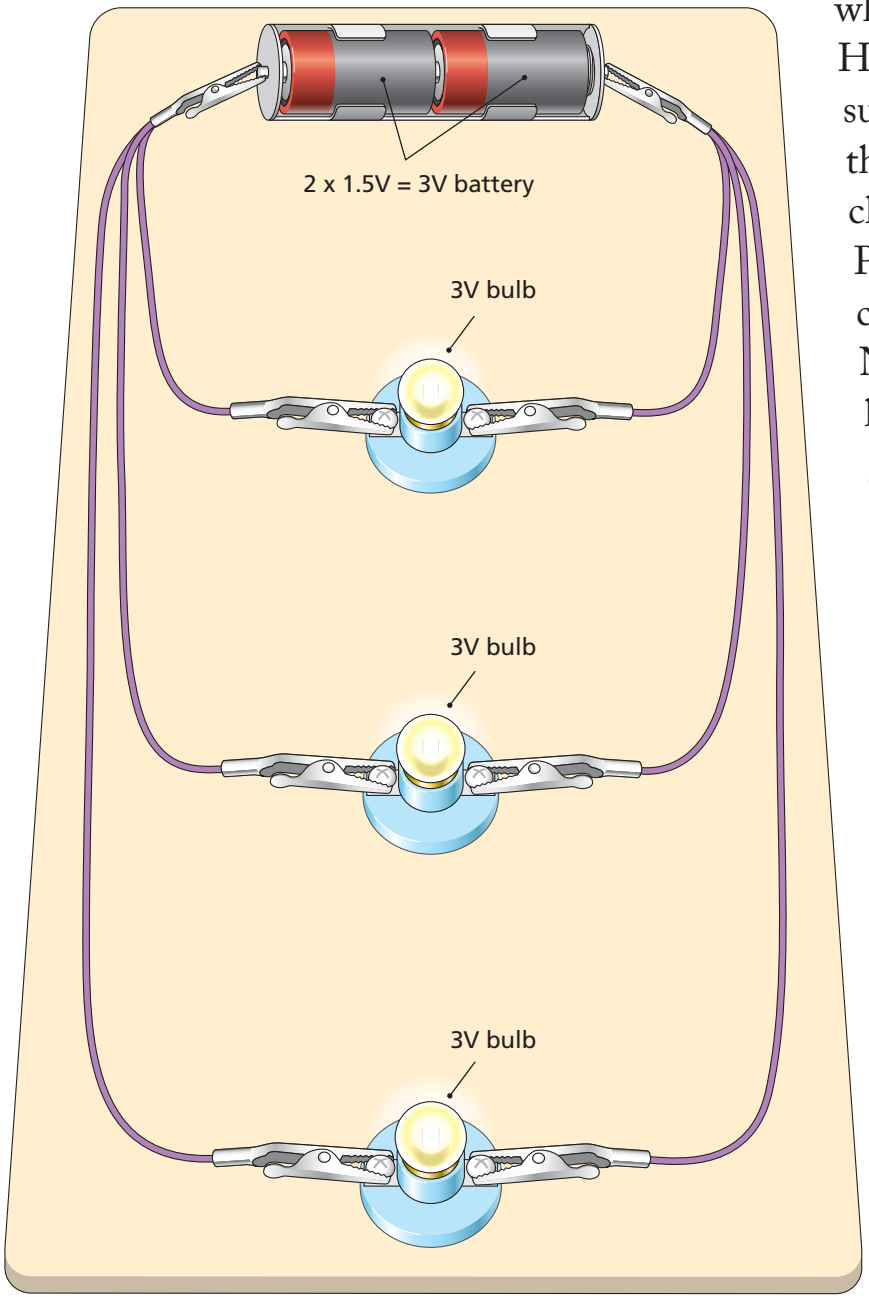
In PARALLEL CIRCUITS, each component has a direct connection to the power supply.

We do not always have to connect components in a line. We can also connect them side by side. When we do this we say the circuit is connected in parallel.

Picture 1 shows three light bulbs connected directly to the same two batteries. This is a simple parallel circuit.

However, you do not have to use as much wire as in Picture 1. Some wires can be shared. Now look at Picture 2, which shows a much neater layout. Here, some wire has been shared. Make sure you see that Pictures 1 and 2 do the same job, and only the layout has changed.

Picture 3 shows the same parallel circuit drawn as a circuit diagram. Notice that, in parallel wiring, wires have to be joined at junctions.



◀ **(Picture 1) Three bulbs connected directly to the same battery.**

The advantages of parallel wiring

No matter how many components you connect up in parallel, every one will work just as well as when there is only one item connected. Similarly, if one component in a parallel circuit stops working, it will not affect the others. This is because each bulb is directly connected to the battery.

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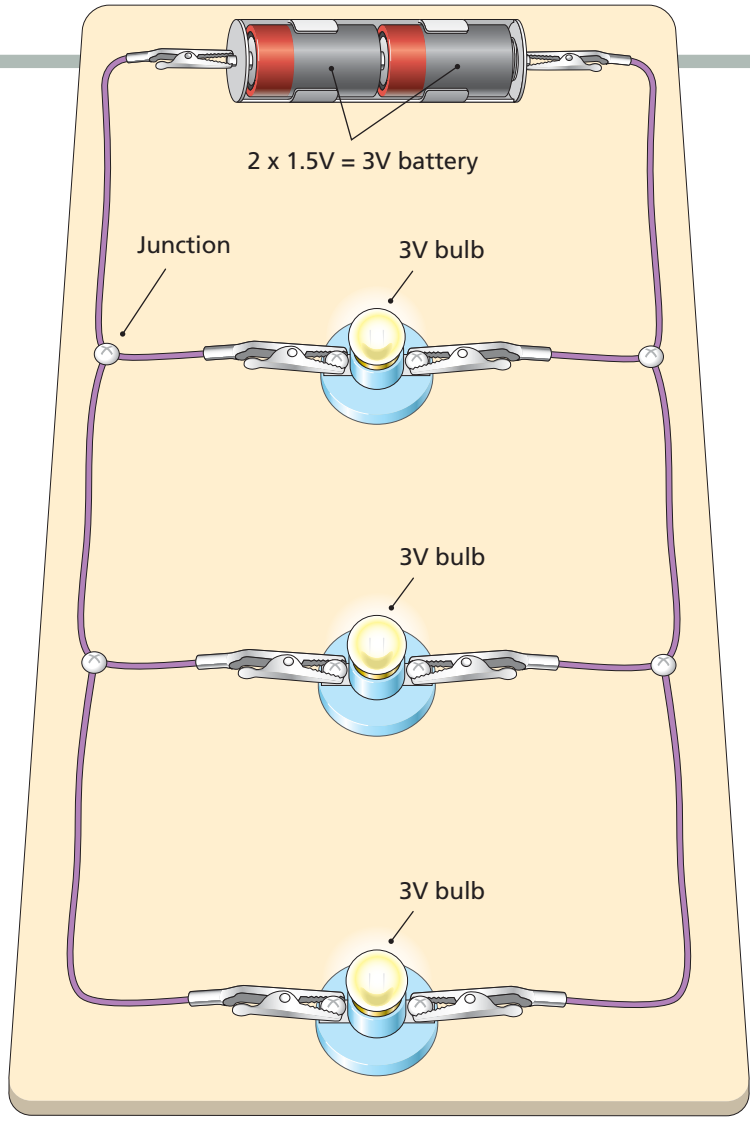
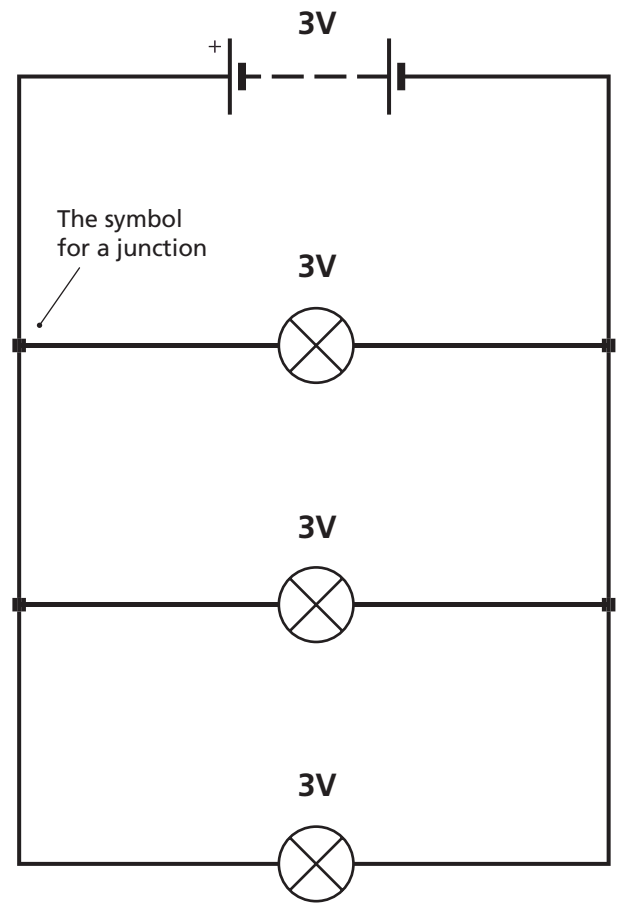


▲ (Picture 2) Parallel circuit using light bulbs.



▲ (Picture 3) The circuit diagram of Picture 2.

You could test this by unscrewing the middle bulb. The top and bottom bulbs will remain as bright as when all three bulbs were on.

If you unscrewed the bottom bulb, the top bulb would continue to shine without any change in its brightness.

Uses for parallel circuits

The electricity supply in your home, school and in most buildings is an example of parallel wiring. This means that you can connect as many items as you need to the electricity supply.

However, the more items you connect, the more power is needed to run them and, if you use a battery, the faster it will run out!

Summary

- **A parallel circuit is made up of several loops, each connected directly to the power supply.**
- **No matter how many bulbs you connect to this circuit, they will all stay equally bright.**

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