



Electricity

LO – I can associate the brightness of a lamp with the number and voltage of cells used in the circuit.



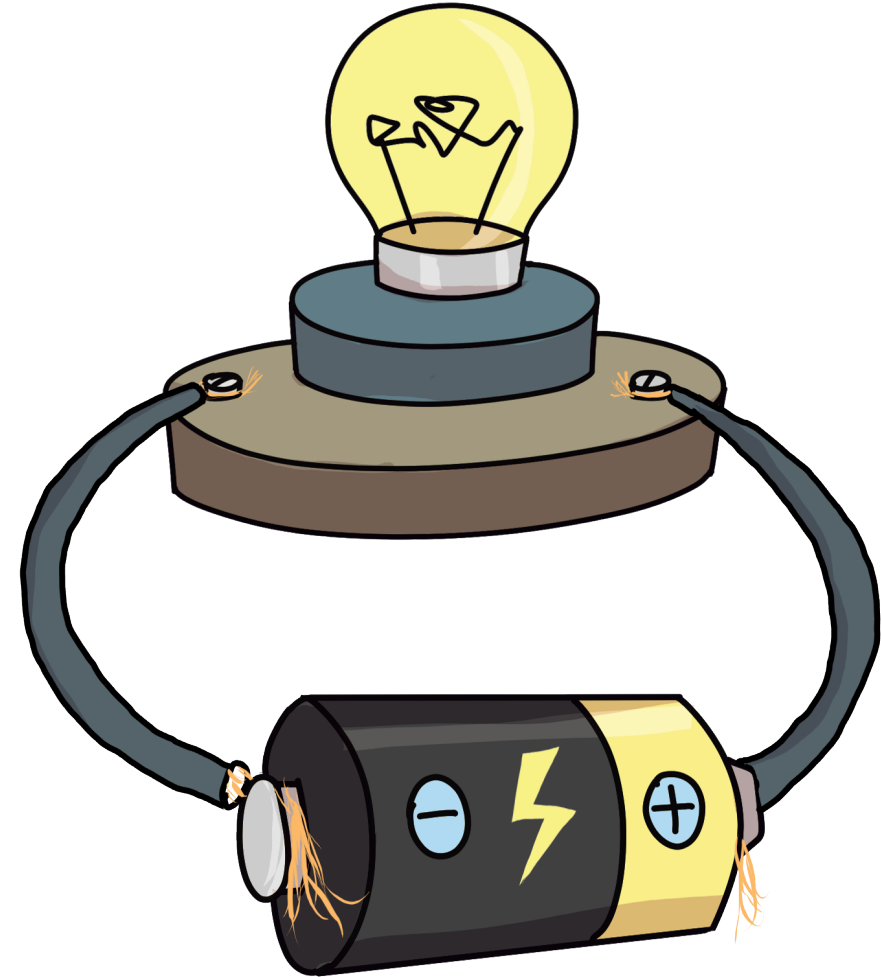
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What makes a circuit work?

Circuits need to be **complete** for them to **work properly**.

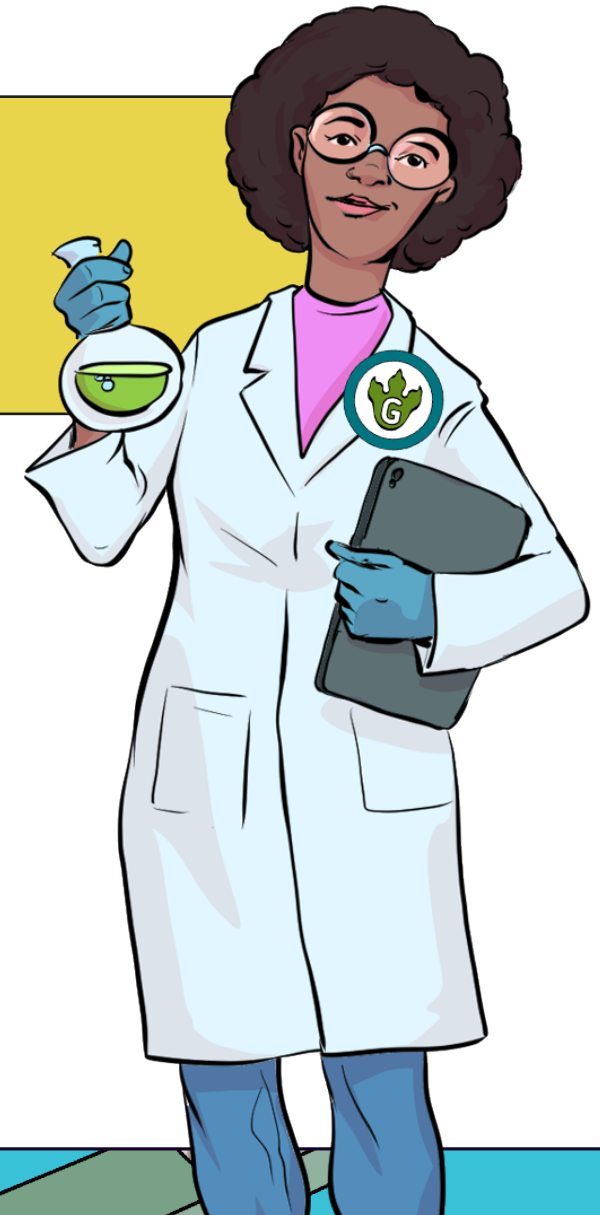
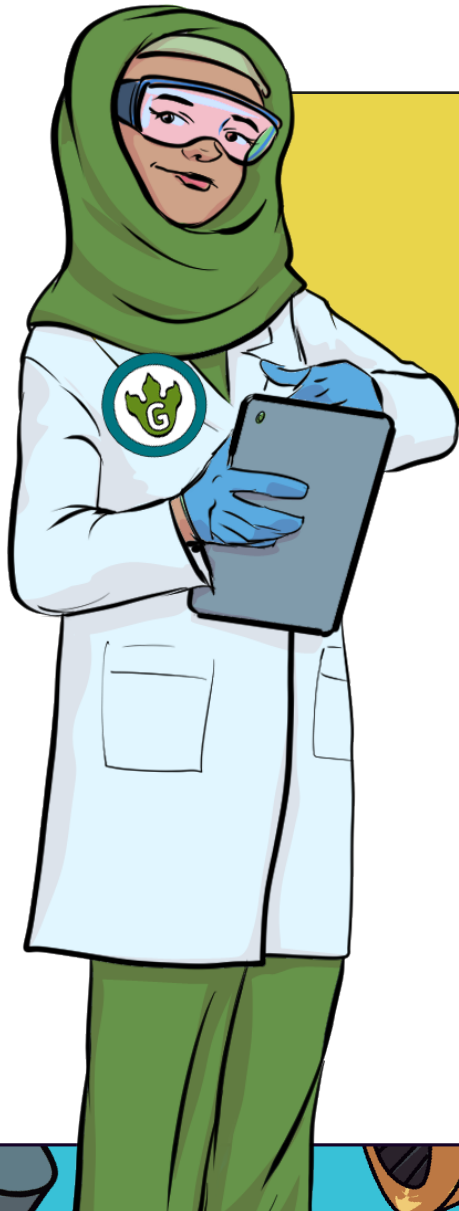
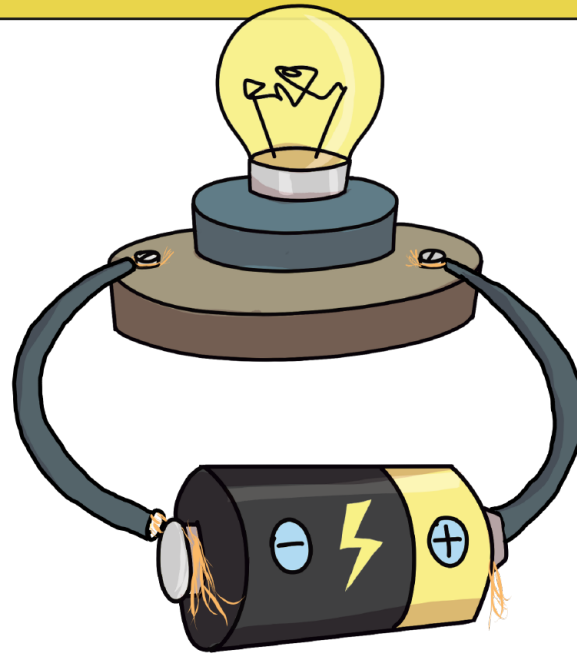
This means that the **electricity** needs to be able to **flow** from the battery, through the wires and components and back to the battery again.

Circuits that are **not complete** will not work because the electricity **cannot flow** properly.

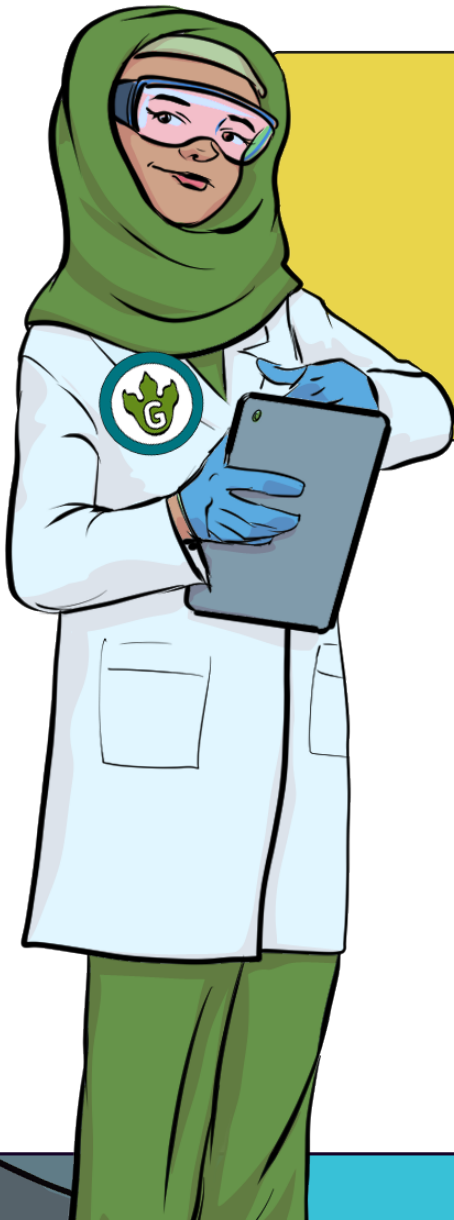


Mini Task!

In small groups, act out how **electricity** travels around a **circuit**.

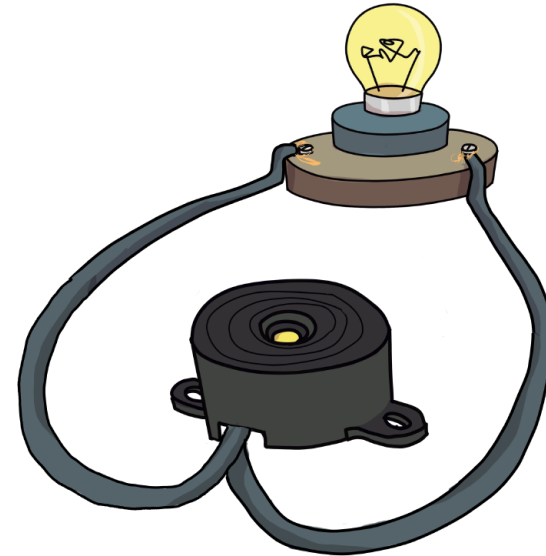
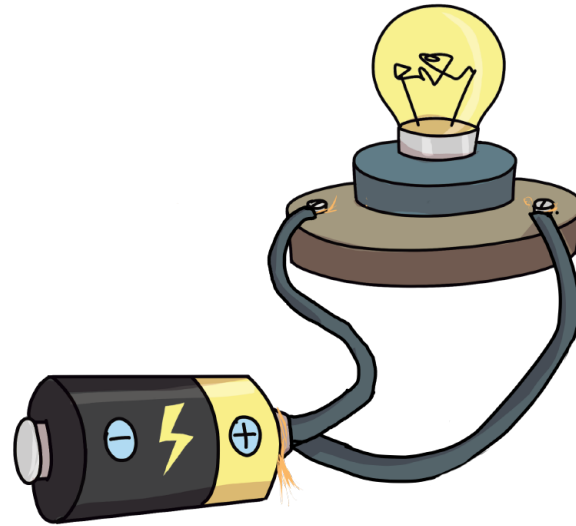


Why will these circuits not work?



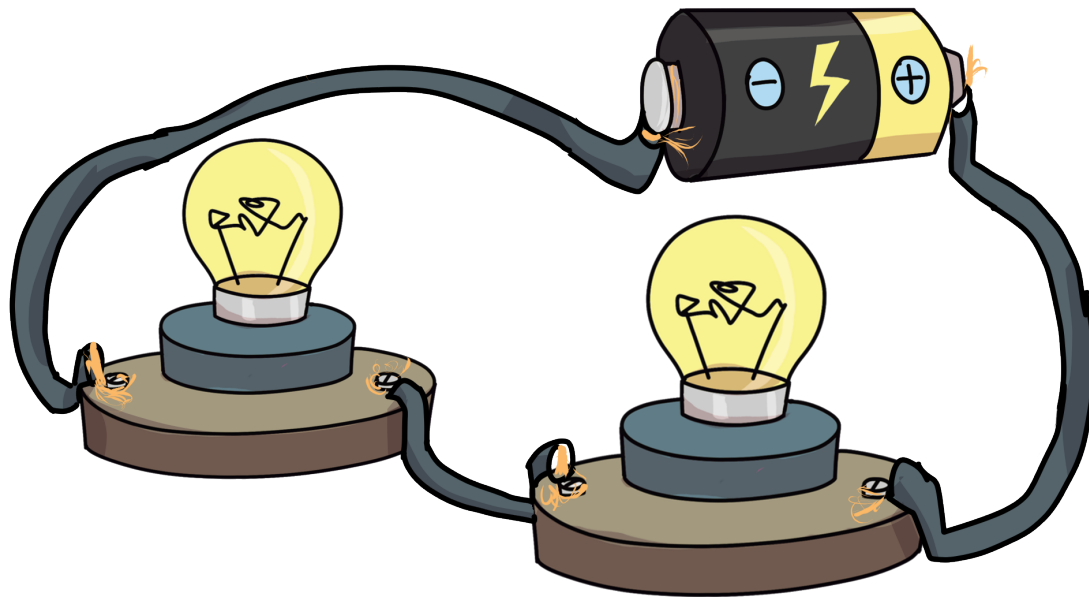
Some circuits might **not work** because something is affecting **the flow** of electricity.

Why do you think these **circuits** are not working?



Changing circuits

You can **change** circuits by adding in more **components**.
This circuit has been changed by adding in **an extra bulb**

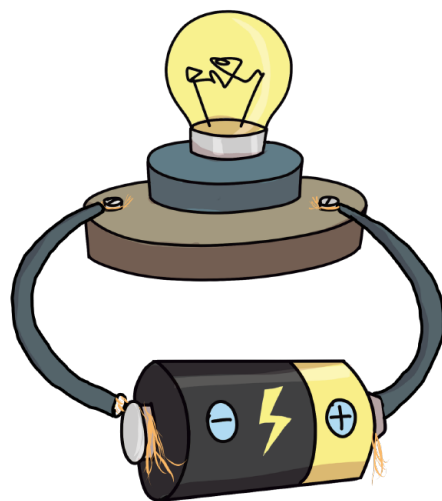


Thinking time...
You can **change** circuits
by adding in more
components.
This circuit has been
changed by adding in
an extra bulb



What to do if your circuit doesn't work

If you have set your circuit up like the diagram and it still doesn't work then there may be something wrong with one of the **components**.



One of these **steps** should make your circuit work, but if it is still not working, ask your teacher for help.

Steps to check a faulty circuit

1. Check the wires are **connected** to the components **correctly**.
2. Make sure the **bulb** is in the **bulb holder** correctly.
3. Make sure the **battery** is in the **battery holder** correctly.
4. **Change** the **battery**.
5. **Change** the **bulb**.
6. **Change** the **wires**.



Volts



We measure the amount of electricity travelling around a circuit in **volts**.

A battery that you might put in a torch or an alarm clock produces **1.5 volts** of electricity.

Electricity coming from a **mains plug socket** is usually **230 volts**!

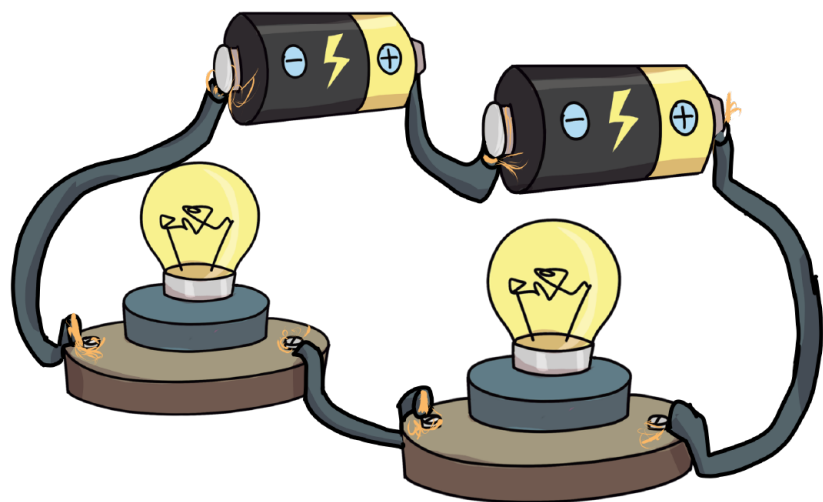
Electricity can be very **dangerous** if used incorrectly. Always ask an adult before touching **electrical sockets**.



Volts

If you have more than one **bulb** in your circuit and they are **not lighting up**, it could be that your **battery** is not producing enough **voltage**.

To increase **the voltage**, either put a battery which produces more volts in the **circuit** or add in **more batteries**.



Tip

Each battery has a **+** and a **-**. If you put more batteries in, make sure that opposite **symbols** are next to each other otherwise your **circuit** might not work.

Careful

Be careful not to put too many **batteries** in one circuit as you could cause **damage** to the bulb.



Activity



Your job today is to **investigate** what happens to the **brightness** of bulbs in circuits when we change **the amount** of batteries and **the voltage** of the batteries.

1. Make the **different circuits** using the equipment stated.
2. Write down the amount of **volts** travelling through the **circuit**.
3. Make a note of what happens to **the brightness** of the bulb.



What did we find out?



Can you describe what happened to the **brightness** of the bulb when you **increased** the voltage?

Can you **explain** your answer using your **results**?

Can you explain **the relationship** between the number of **bulbs** in a circuit and **the brightness** of the bulbs?

What **conclusions** can you make?

Activity



Make a circuit that includes	Draw a diagram of the circuit	Total voltage of batteries	What happened to the bulb?
1 battery 2 wires 1 bulb			
1 battery 3 wires 2 bulbs			
2 batteries 3 wires 1 bulb			
2 batteries 4 wires 2 bulbs			
2 batteries 5 wires 3 bulbs			
3 batteries 6 wires 3 bulbs			

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Helpful Hint!

Use point, evidence, explain (P.E.E.) structure when drawing a conclusion

P = I found out that the brightness of the bulb _____

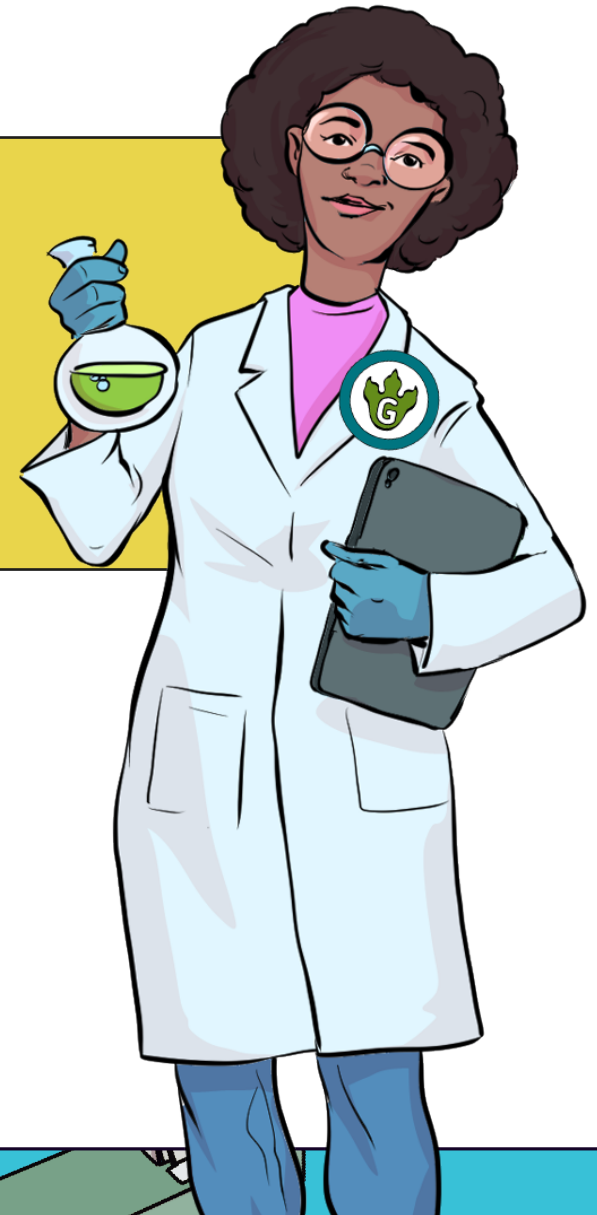
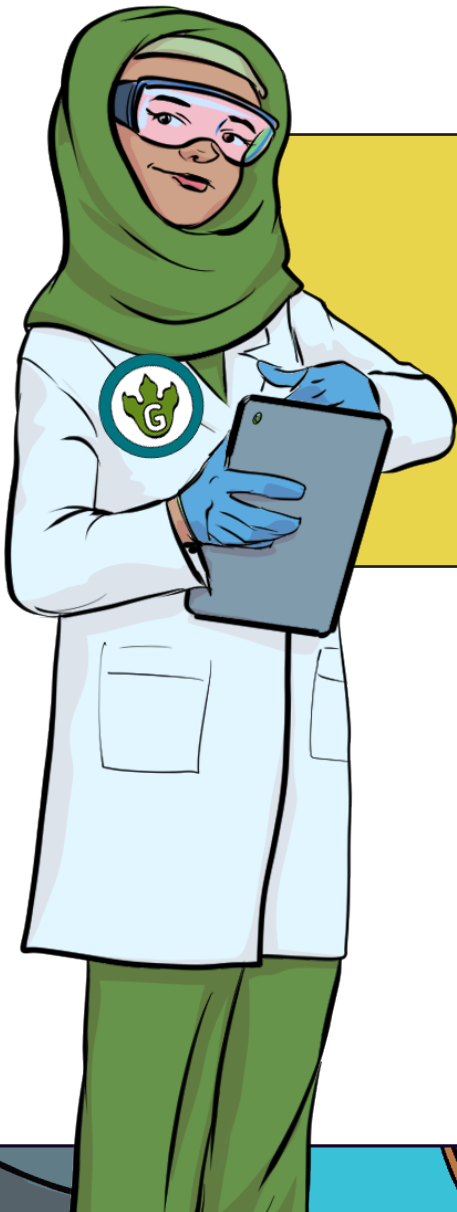
E = I know this because my results show that _____

E = This is because when you increase the voltage in a circuit _____



Recap Quiz

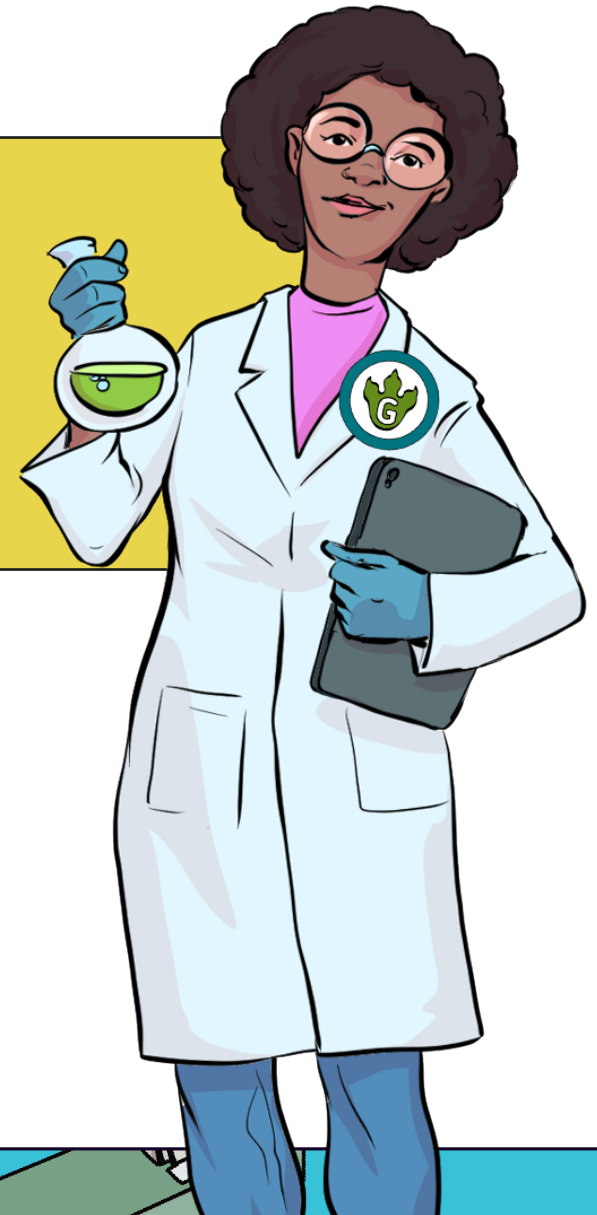
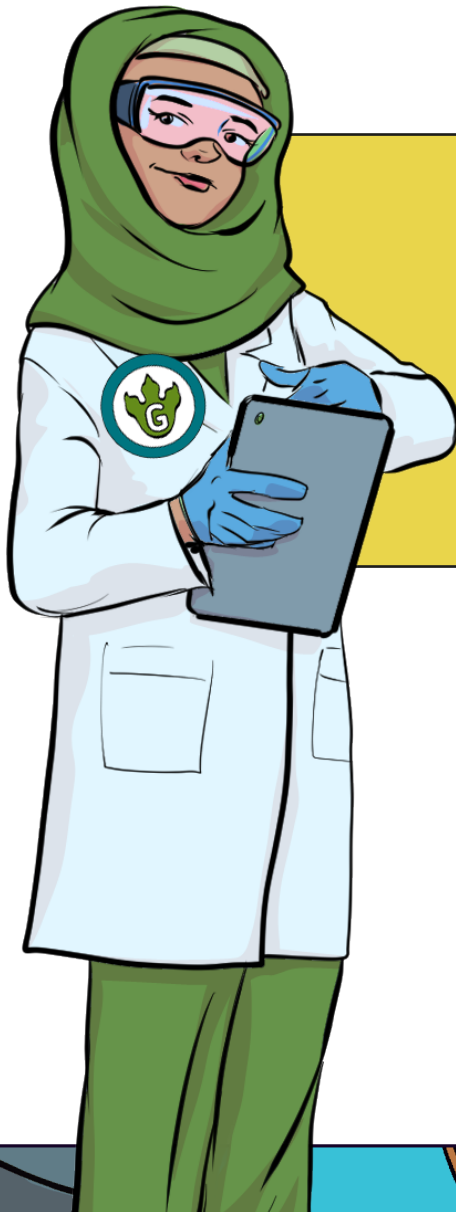
1. What **unit** of measurement do we use to **measure** electrical energy in a battery?



Recap Quiz

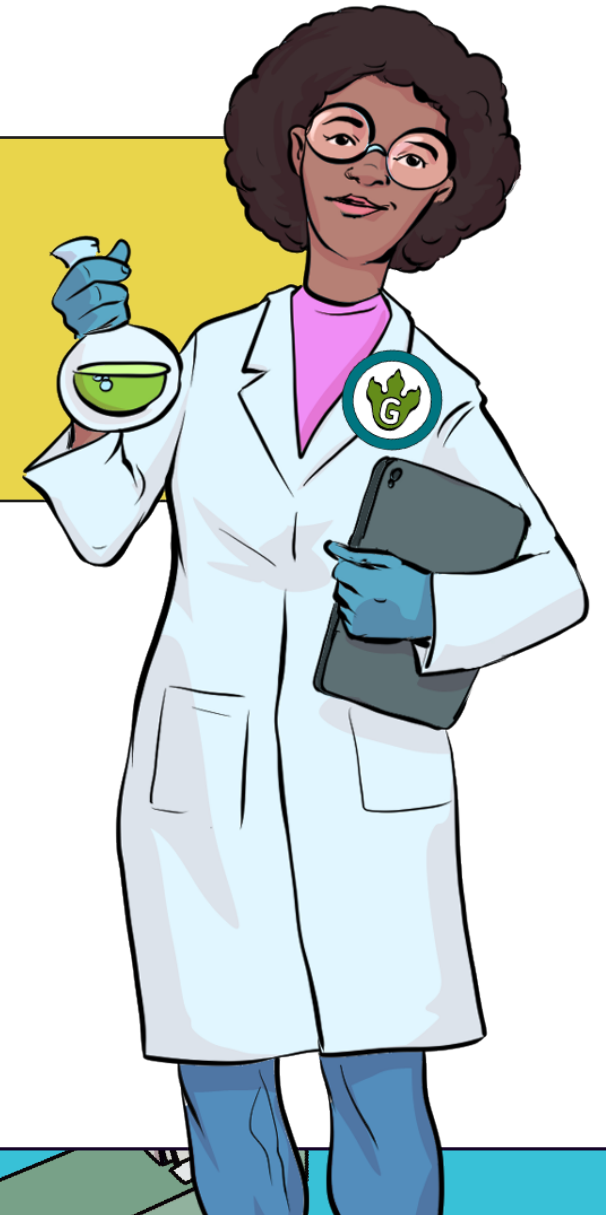
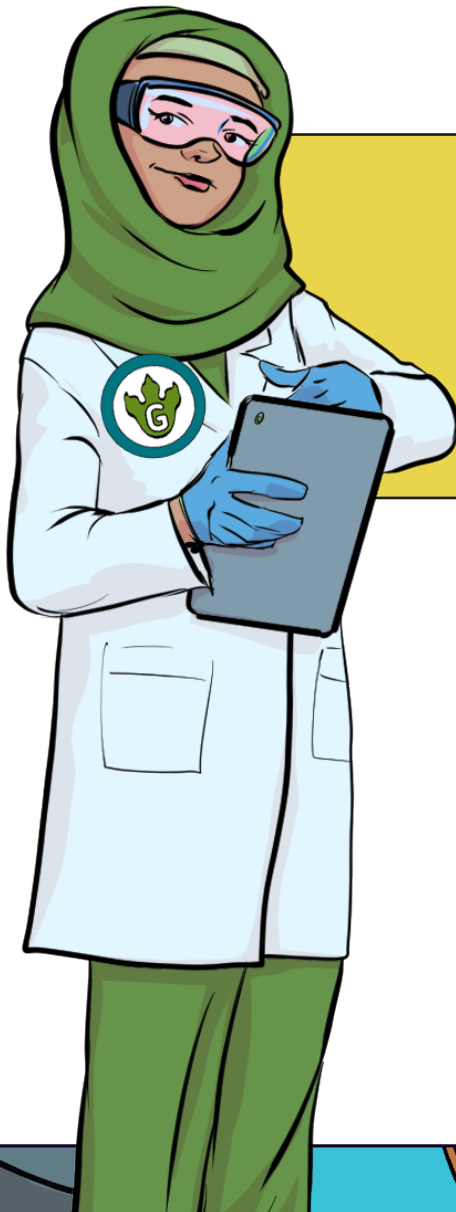
1. What **unit** of measurement do we use to **measure** electrical energy in a battery?

Volts



Recap Quiz

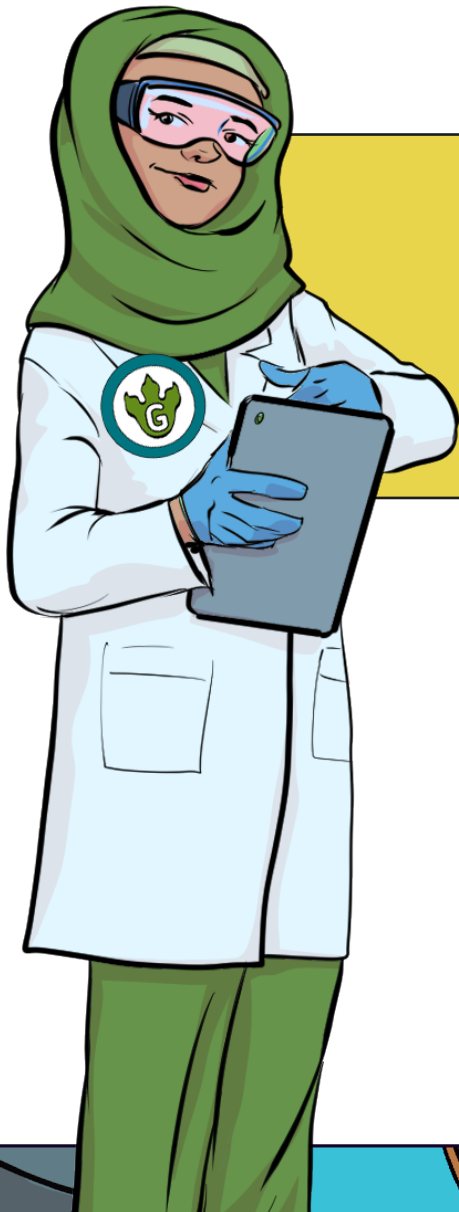
2. If we add more **bulbs** to a simple **circuit**, what happens to the bulbs?



Recap Quiz

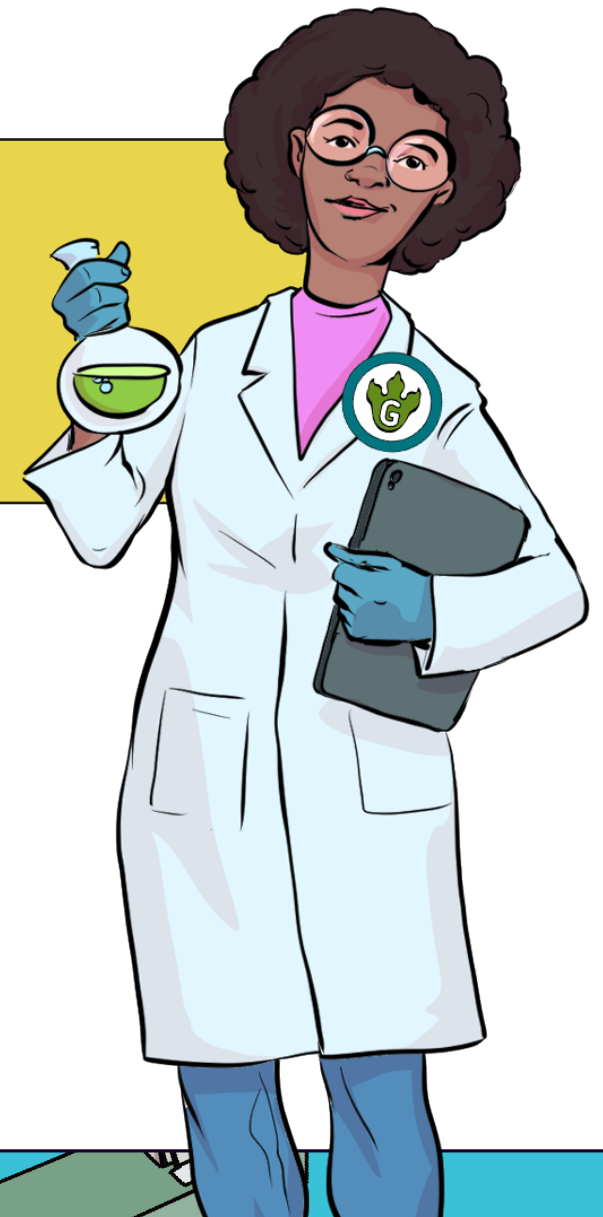
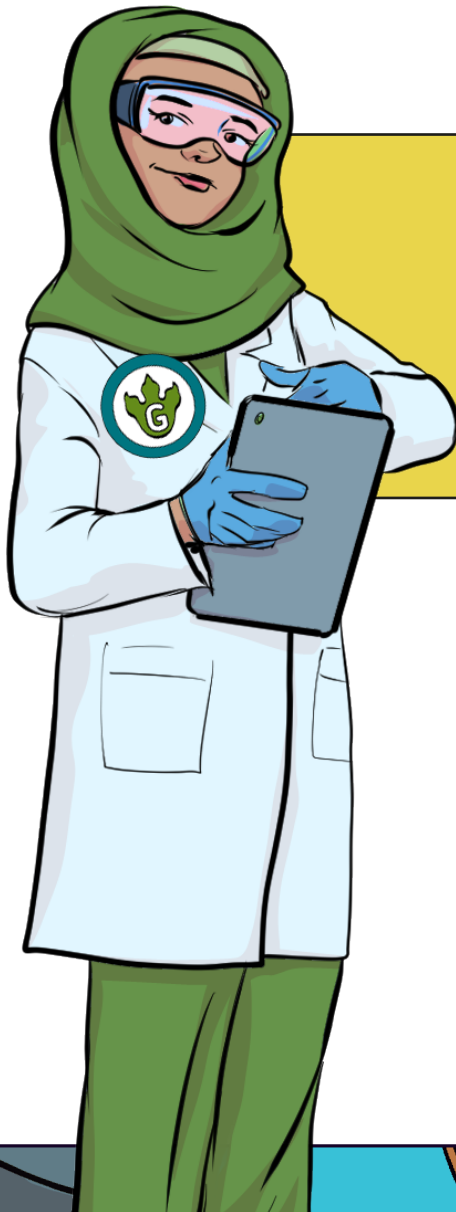
2. If we add more **bulbs** to a simple **circuit**, what happens to the bulbs?

They get dimmer.



Recap Quiz

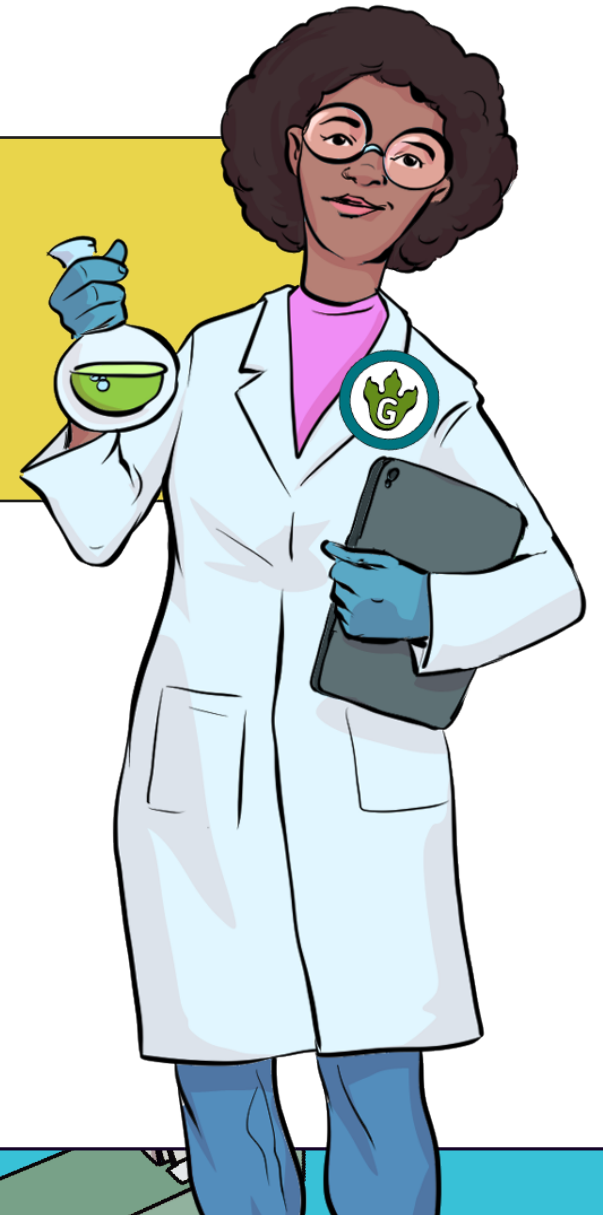
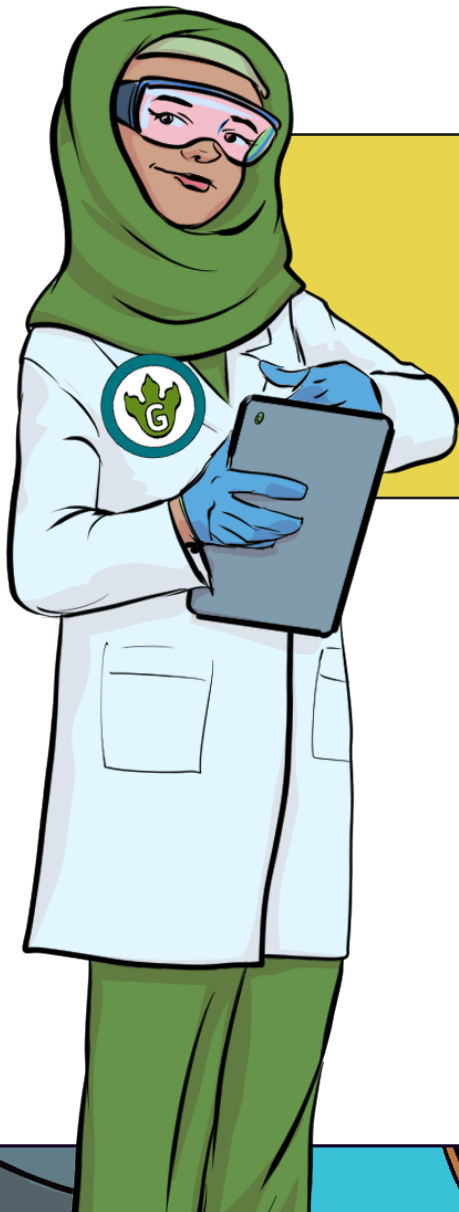
3. How can we make a bulb
brighter in a circuit?



Recap Quiz

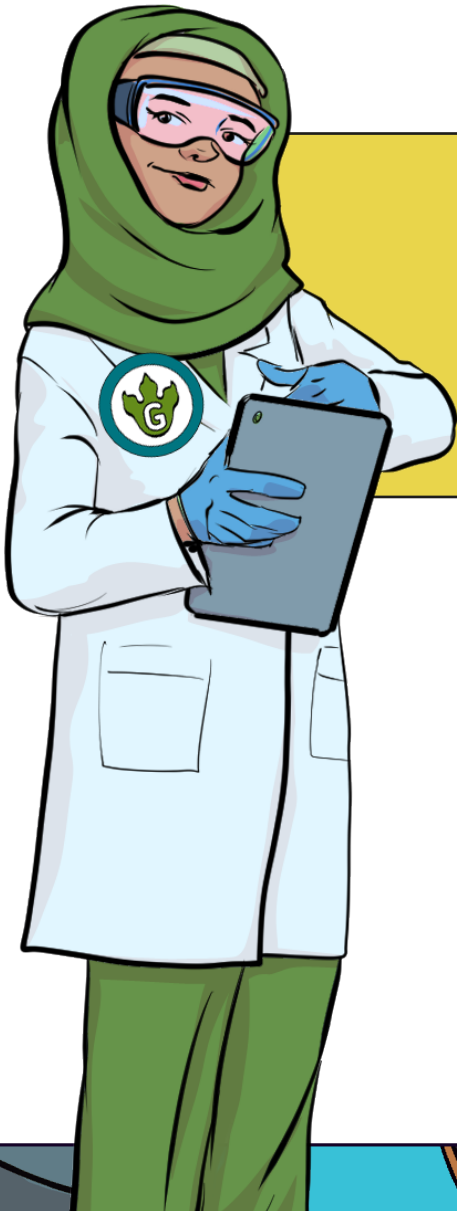
3. How can we make a bulb **brighter** in a circuit?

Add a more powerful battery
or add another battery to the circuit.



Recap Quiz

4. What can happen if we add **too many batteries** to our circuit?



Recap Quiz

4. What can happen if we add **too many batteries** to our circuit?

It can cause damage to the bulbs.

