

Physics - Key Stage 3

Lesson 2 - Electricity and Magnetism

# Current & Series Circuits - Download

Miss White



# Questions from the video



# Quick Check 1

1. Which particles carry charge within wires to make electric current?
2. What provides the energy for this to happen?
3. Draw the symbol for a lamp.
4. Draw the symbol for a cell.



## **Quick check 2 - Have a go at the questions**

- 1) What is the name of the particles that carry charge in an electrical circuit?**
- 2) What is meant by current?**
- 3) What is the unit of charge? What is its symbol?**
- 4) What is unit of current? What is its symbol?**



## Quick check 2 - Hints

- 1) The particles which carry charge in electrical circuits are \_\_\_\_\_.
- 2) Current is the \_\_\_\_\_ of flow of \_\_\_\_\_.
- 3) The unit of charge is \_\_\_\_\_ and the symbol is \_\_\_\_\_.
- 4) The unit of current is \_\_\_\_\_ and the symbol is \_\_\_\_\_.

### Keywords:

**rate**

**amps**

**electrons**

**coulombs**

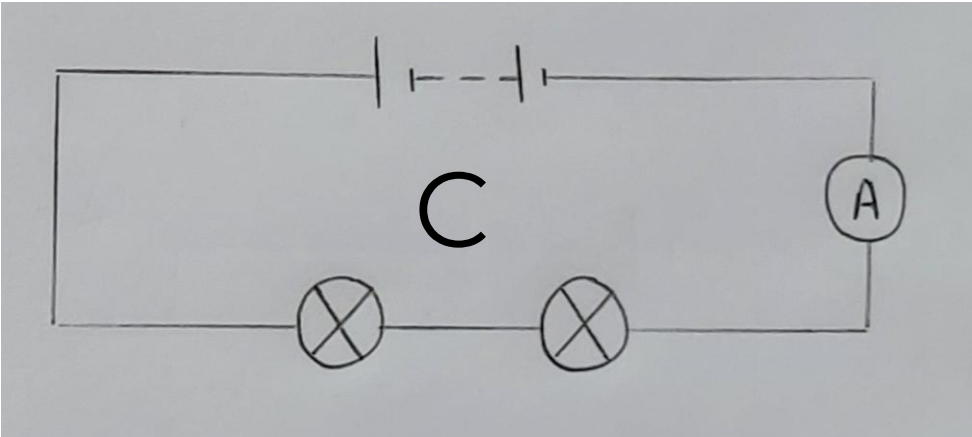
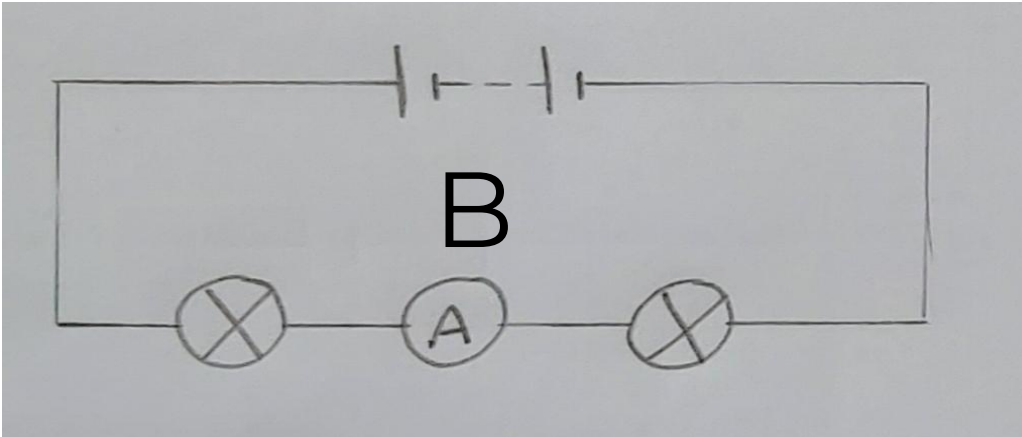
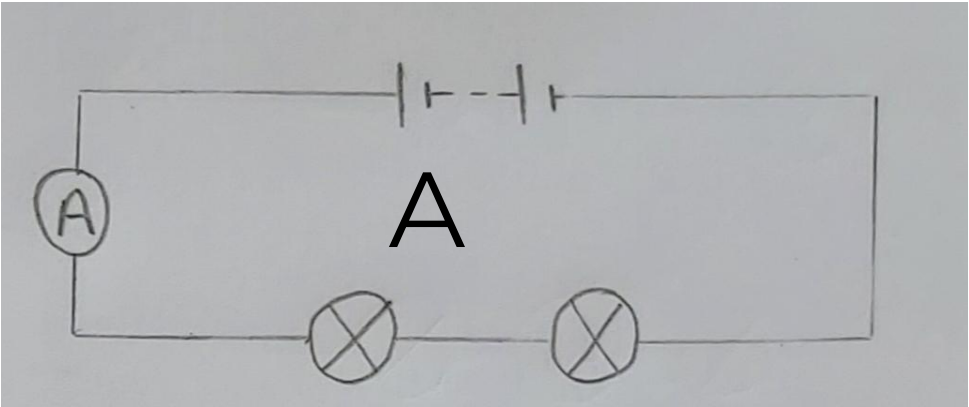
**charge**



# Investigating current in series

Here is a table for their results:

Position	Current (—)
A	
B	
C	



# Investigating current in series

Write a sentence to describe what the student has found

Position	Current (A)
A	1.95
B	1.95
C	1.95



# Quick check 3

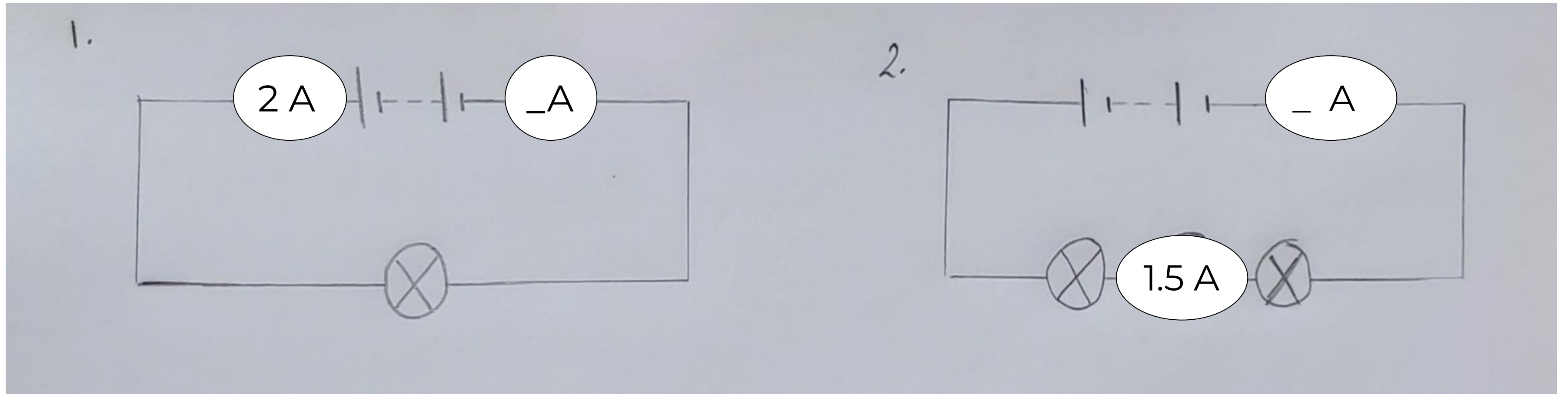
1. How many loops does a series circuit contain?
2. How does the current compare in a series circuit when measured at different places?
3. What piece of equipment is used to measure current?





# Current in a series circuit

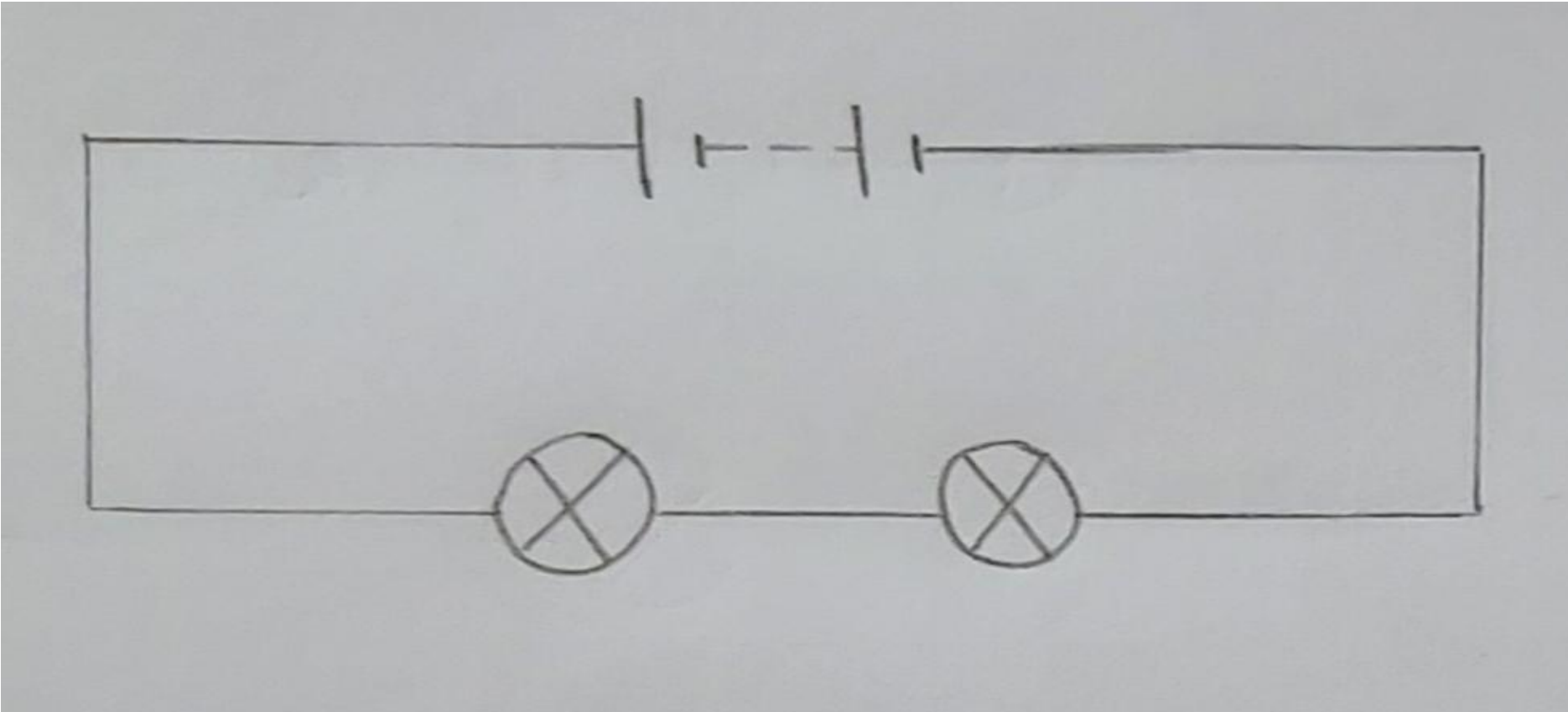
Source: Miss White



Fill in the gaps



# Here is the students investigation and results



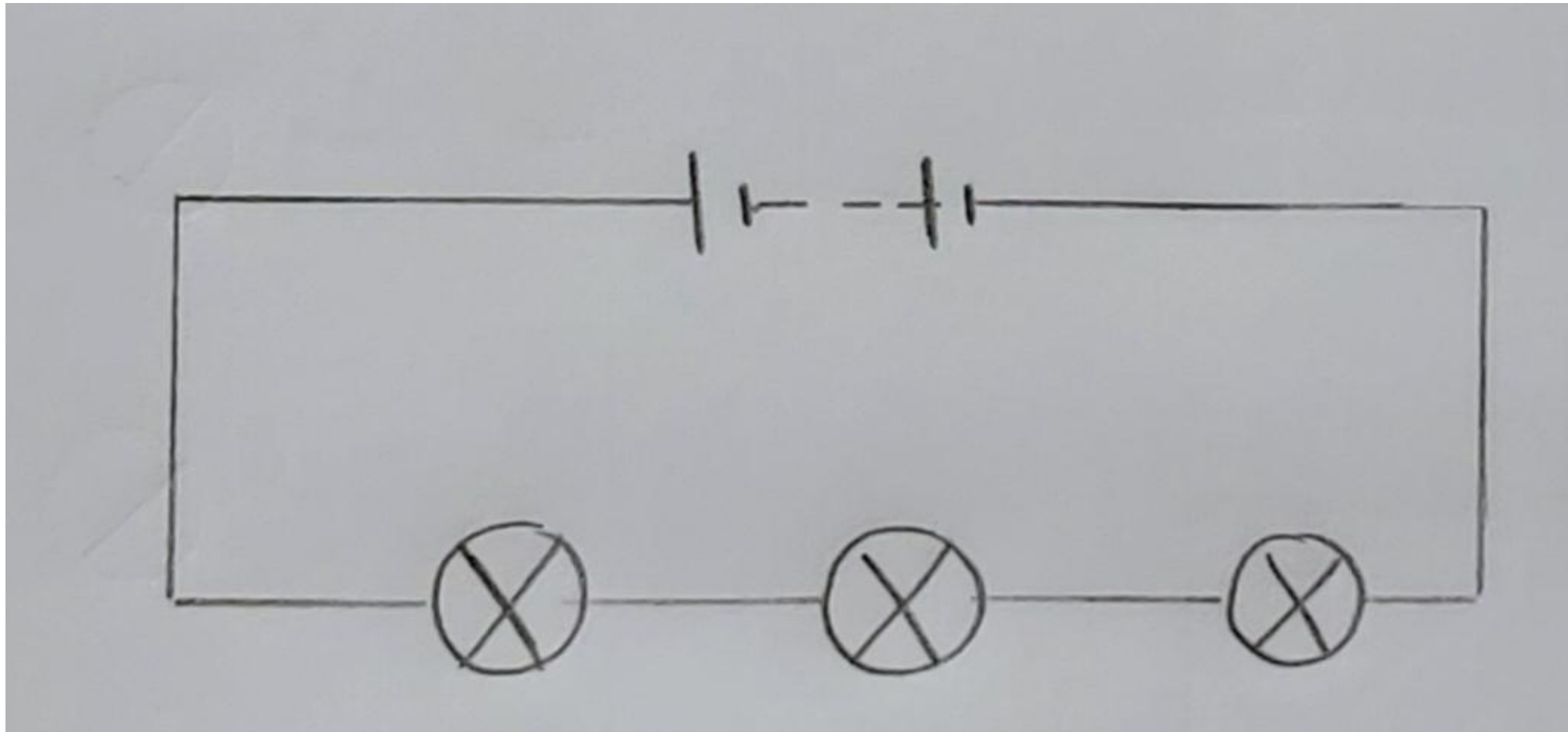
Position	Current (A)
A	1.95
B	1.95
C	1.95

Source: Miss White



# They then added another lamp

Source: Miss White



# They then added another lamp

Here are the results

Position	Current (A)
A	0.95
B	0.95
C	0.95

**Does the current in a series circuit change if you have more lamps in series?**

**Why do you think this happens?**



# Independent Task

1. What can we say about current at different points around a series circuit?
2. With the same battery, does the current change if you have more lamps in the circuit?
3. Why does this happen?
4. What would happen to brightness of the lamps in the circuit?



# Independent task - Hints

1. What can we say about current at different points around a series circuit?

**The current is the \_\_\_\_\_ at all points in a \_\_\_\_\_ circuit – it doesn't matter where the ammeter goes.**

2. With the same battery, does the current change if you have more lamps in the circuit?

**If there are more lamps in a series circuit the current \_\_\_\_\_.**

3. Why does this happen?

**This is because it is harder for the charge to flow, the \_\_\_\_\_ of the circuit has increased.**

4. What would happen to brightness of the lamps in the circuit?

**The brightness \_\_\_\_\_ when there are more lamps..**



# Answers



# Quick Check 1 - Answers

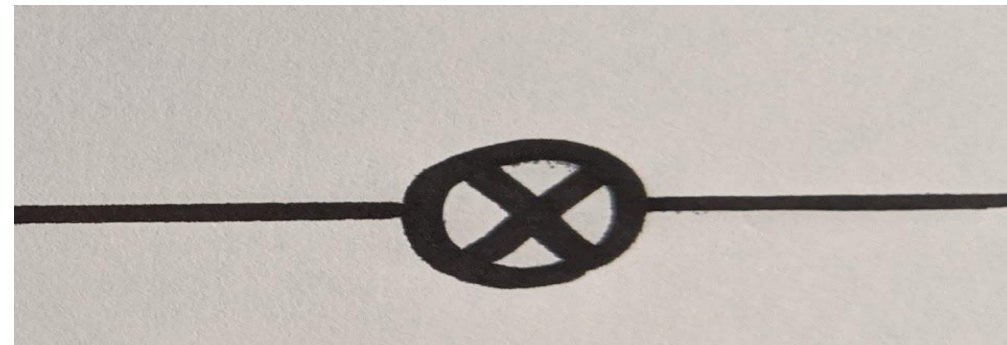
1. Which particles carry charge within wires to make electric current?

**Electrons**

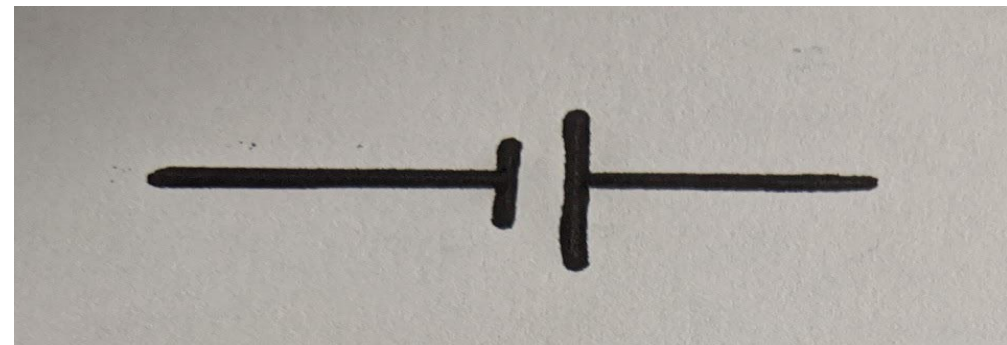
2. What provides the energy for this to happen?

**A battery/cell**

3. Draw the symbol for a lamp



4. Draw the symbol for a cell



Source: Miss White





## Quick check 2 - Answers

- 1) The particles which carry charge in electrical circuits are **electrons**.
- 2) Current is the **rate** of flow of **charge**.
- 3) The unit of charge is **coulombs (C)**
- 4) The unit of current is **amps (A)**.



# Investigating current in series - Answer

This tells us that current is the same at all points in a series circuit.

Position	Current (A)
A	1.95
B	1.95
C	1.95



# Quick check 3 - Answers

1. How many loops does a series circuit contain?

**A series circuit contains just one loop**

2. How does the current compare in a series circuit when measured at different places?

**Current is the same everywhere in a series circuit**

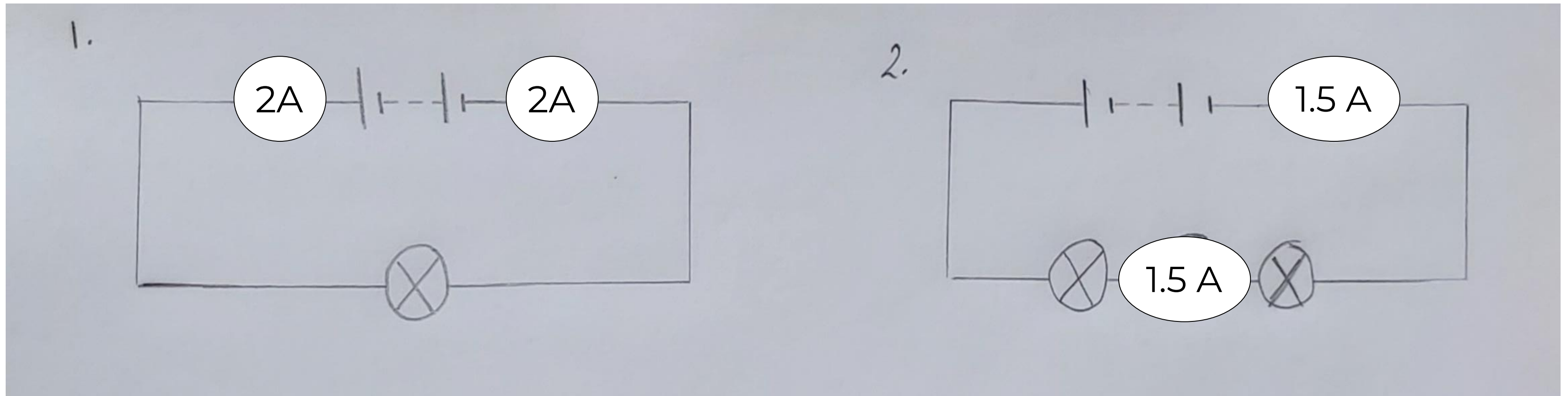
3. What piece of equipment is used to measure current?

**Current is measured using an ammeter**



# Current in a series circuit - Answers

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Have a go at these two



# Independent task - Answers

1. What can we say about current at different points around a series circuit?  
**The current is the same at all points in a series circuit – it doesn't matter where the ammeter goes.**
2. With the same battery, does the current change if you have more lamps in the circuit?  
**If there are more lamps in a series circuit the current decreases.**
3. Why does this happen?  
**This is because it is harder for the charge to flow, the resistance of the circuit has increased.**
4. What would happen to brightness of the lamps in the circuit?  
**The brightness decreases when there are more lamps.**

