Making Electromagnets **Core Practical**

Aim: The aim of the practical is to construct a working electromagnet.

Equipment: List all the equipment that you will be using in the practical today.

Prediction: I predict that **more/fewer** coils will pick up **more/fewer** paperclips.

Method: Write a step-by-step method for the practical investigation. Use the words in the box below to help you fill in the blanks.

paperclips	coils	power pack	equipment	crocodile clips

Step 1 - Collect the _____.

Step 2 - Place _____ on two of the wires.

Step 3 - Attach the opposite end of each wire onto the _____.

Step 4 – Wrap the copper wire around the nail until you reach the required amount of _____. Use a pair of wire strippers to remove some of the insulation. Leave 2cm of exposed wire at each end of the copper wire.

Step 5 – Attach the crocodile clips to the exposed wire.

Step 6 – Lay the _____ on the bench and hold the insulated wire either side of the nail.

Step 7 – Hover the nail over the paperclips and record in your table how many paperclips are attracted to the nail.

Diagram of the apparatus: Draw a diagram of your equipment. Use the labels in the box below to help you label your diagram correctly.

nail	power pack	wires	crocodile clips	paperclips

Safety:

Hazard	Risk	Emergency Procedure
electricity		Inform an adult in the room immediately.
copper wire		Inform an adult in the room immediately.
power pack	Very heavy – could fall off the bench and land on somebody's foot.	

Results:

	Number of Paperclips Collected			
Number of Coils	**Try 1**	**Try 2**	**Try 3**	**Average**
10				
20				
30				
40				
50				

Conclusion: Write about what you found out from the practical. Remember to use your results to support your answer.

From the practical investigation, I found out that as **more/fewer** coils were added to the electromagnet, the **more/fewer** paperclips it was able to attract.

Evaluation:

What were the variables in this experiment?

independent variable	
dependent variable	
control variable	

What was the biggest difficulty you had with this experiment and how could you overcome it?

What would be the advantage of comparing your results with other people's?

Making Electromagnets **Core Practical Answers**

Aim: The aim of the practical is to construct a working electromagnet.

Equipment: List all the equipment that you will be using in the practical today.

power pack, 1 large nail, 30cm of insulated copper wire, 2 crocodile clips, 2 wires and 30 paperclips.

Prediction: I predict that **more/fewer** coils will pick up **more/fewer** paperclips. **Students will have their own answers.**

Method: Write a step-by-step method for the practical investigation. Use the words in the box below to help you fill in the blanks.

paperclips	coils	power pack	equipment	crocodile clips

Step 1 - Collect the **equipment**.

Step 2 - Place **crocodile clips** on two of the wires.

Step 3 - Attach the opposite end of each wire onto the **power pack**.

Step 4 – Wrap the copper wire around the nail until you reach the required amount of **coils**. Use a pair of wire strippers to remove some of the insulation. Leave 2cm of exposed wire at each end of the copper wire.

Step 5 – Attach the crocodile clips to the exposed wire.

Step 6 – Lay the **paperclips** on the bench and hold the insulated wire either side of the nail.

Step 7 – Hover the nail over the paperclips and record in your table how many paperclips are attracted to the nail.

Safety: Students answers may vary.

Hazard	Risk	Emergency Procedure
electricity	**electric shock**	Inform an adult in the room immediately.
copper wire	**Sharp – could cut the skin.**	Inform an adult in the room immediately.
power pack	Very heavy – could fall off the bench and land on somebody's foot.	**Inform an adult in the room immediately.**

Conclusion: Write about what you found out from the practical. Remember to use your results to support your answer.

From the practical investigation, I found out that as **more** coils were added to the electromagnet, the **more** paperclips it was able to attract.

Evaluation:

What were the variables in this experiment?

independent variable	**The number of coils of wire.**
dependent variable	**The number of paperclips collected.**
control variable	**The method and equipment.**

What was the biggest difficulty you had with this experiment and how could you overcome it?

Students will have their own answers.

What would be the advantage of comparing your results with other people's?

To ensure that the results are repeatable.