Making Electromagnets **Core Practical**

Aim: The aim is to _____

Equipment:

Prediction: I predict _____

Method: Write a step-by-step method. Remember to include all of the equipment listed and describe how you would use it.

Diagram of the apparatus: Draw a diagram of the equipment and **label** your diagram.

Safety:

Hazard	Risk	Emergency Procedure
electricity	electric shock	Inform an adult in the room immediately.

Results:

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

Conclusion: What did you find out from the investigation? _____

_____

_____

Evaluation: Write about how you could improve the investigation.

To improve the investigation next time, I could _____

_____

_____

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 is to **construct a working electromagnet.**

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

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

Prediction: I predict
Students will have their own answers.

Method: Write a step-by-step method for the practical investigation. The first three steps have been completed for you.

Student answers may vary, but should roughly follow the suggestion below:

Step 1 – Collect the equipment.

Step 2 – Place crocodile clips on two of the wires.

Step 3 – Attach the opposite end of each wire to the power pack.

Step 4 – Wrap the copper wire around the nail until you reach the required number 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: What did you find out from the investigation?
Students' answers will vary. They should find that as more coils are added to the electromagnet, the more paperclips they are able to collect.

Evaluation: Write about how you could improve the investigation.

To improve the investigation next time, I could
Students will have their own answers.

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.