

Science Skills Year 9 booklet: 3

Electromagnets

Task 1 deadline (self-assessed):

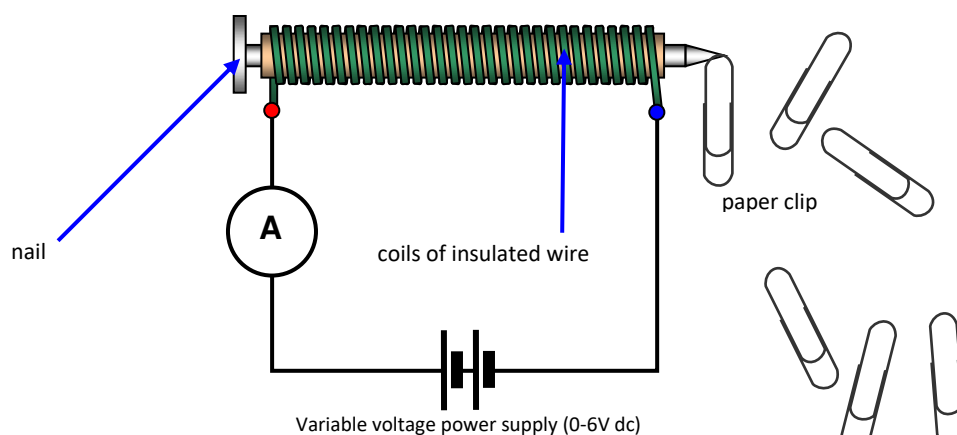
Task 2 deadline (peer-assessed):

Task 3 deadline (teacher-assessed):

The tasks in this booklet relate to the investigation below. Read the following information before attempting any of the tasks.

AIM

The aim of this experiment is to investigate how the strength of an electromagnet is affected by the size of the voltage.



The coil of wire may get hot.

EQUIPMENT

A large (15cm long) iron nail, 1 metre of insulated copper wire, metal paper clips
A power supply (0-6V dc), connecting leads with clips.

WHAT TO DO

Strip off about 5 cm of the insulation from each end of the wire. Set up the apparatus as shown in the diagram. Switch on the power supply at a low voltage. Record the number of paperclips that are held by the electromagnet. Increase the voltage at even increments and record the number of paperclips each time.

Task 1

Everyone to do- Match the key terms to the definitions:

Electromagnet	Also known as potential difference. The difference in energy of two parts of a circuit.
Voltage	A magnet which can be switched on and off by an electrical current.
Current	A flow of electrons through a wire.
Core	A magnetic object, usually made of steel.
Paper clip	Something which can be added to the coil of wire in an electromagnet.

Green: you will be tested on the spelling of the five key terms

Amber: you will be tested on the spelling and the definition of the key terms

Red: you will be tested on the spelling and definition of the key terms. You will also need to put each into a sentence

Killer: you will be asked for synonyms for the key terms (if there are any!)

Task 2

Green:

Identify the variables of the experiment - independent, dependent and control (minimum of 3 controls).

- Independent-
- Dependent-
- Control

Peer assessment score:

Amber:

Write a detailed risk assessment for this investigation. Include a minimum of 4 risks, how likely they are to happen and how you will control/reduce the risk.

You need to use a minimum of 50 words and chunk your information into manageable steps!

Peer assessment:

STAR:

STAR:

WISH:

Red:

Write a method for the investigation which is more detailed and reproducible than the one at the start of the booklet. *Ensure that you are specific with what equipment you will use, your independent variable, your dependent variable and your control variables.*

You need to use a minimum of 60 words and chunk your information into manageable steps!

Peer assessment:

STAR:

STAR:

WISH:

Task 3:

Green:

Design a table of results for the investigation assuming we measured every 1V from 0V to 12V. Leave the column for number of paperclips blank. *Hint: don't forget your units!*

Amber:

Design a table of results for the investigation assuming we measures every 1V from 0V to 12V. Add in predicted results for the number of paperclips and write a conclusion of more than 30 words.

Red:

Design a table of results for this investigation assuming we measures every 1V from 0V to 12V. Add in predicted results for the number of paperclips. Then, design a table of results for investigating the impact of increasing the number of coils in an electromagnet. Again, include predicted results for the number of paperclips.

Form a conclusion of more than 30 words for each results table.

Teacher assessment:

A2L = 1	Work is thorough, you have picked challenging tasks and have shown effort and understanding.
A2L = 2	Work has detail in most places, you have picked relevant tasks and have shown effort.
A2L = 3	Work lacks detail, there are some errors and shows some lack of preparation/understanding.
A2L = 4	Work is incomplete, there are errors throughout and a clear lack of preparation/understanding.

Teacher comment: