Name:
Science Class:
Teacher:
Hand in day:

Y9 Science
Term 2: Homework Booklet
Physics

	Hand in Date	Parents Signature
Magnetism		
Homework 1		
Homework 2		
Homework 3		

Magnetism – Homework 1

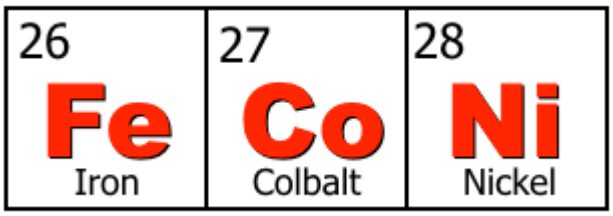
Read through the information below and answer the questions on the next page.

Bar magnets

Most materials are not magnetic, but some are. A magnetic material can be magnetised or will be attracted to a magnet.

These metals are magnetic:

- **iron**
- **cobalt**
- **nickel**



Steel is mostly iron, so steel is magnetic too.

A bar magnet is a **permanent magnet**. This means that its magnetism is there all the time and cannot be turned on or off.

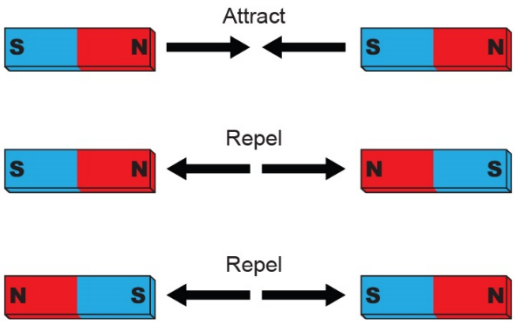
The ends of the magnet are called poles. A bar magnet has two magnetic poles:

- **north pole**
- **south pole**

<u>Attract and repel</u>

If you bring two bar magnets together, there are two things that can happen, attraction and repulsion:

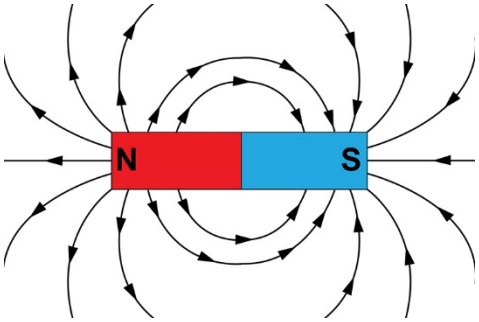
- if you **bring a north pole and a south pole together, they attract** and the magnets stick together
- if you **bring two north poles together, or two south poles together, they repel** and the magnets push each other away



We say that opposite poles attract, and like poles repel.

<u>Magnetic fields</u>

A magnet creates a magnetic field around it. You cannot see a magnetic field, but you can observe its effects. A force is exerted on a magnetic material brought into a magnetic field. The force is a **non-contact force because the magnet and the material do not have to touch each other**.



Questions

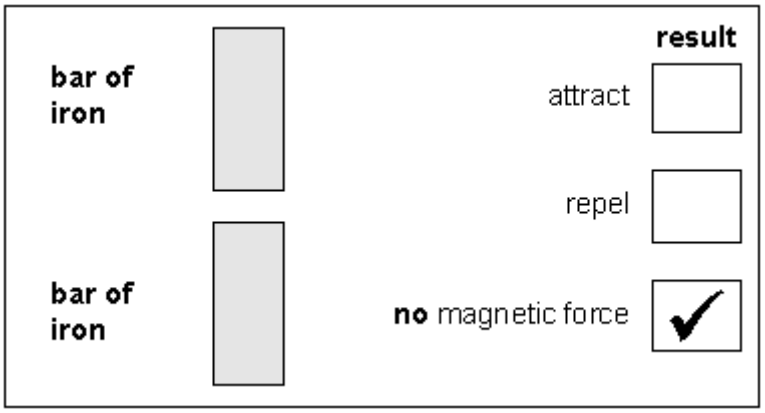
1. Name the three magnetic metals.
2. Why is steel magnetic?
3. Give an example of a permanent magnet.
4. What are the names of the two poles of a bar magnet?
5. What happens when you bring a north pole and a south pole together?
6. What happens when you being two north poles together?
7. What happens when you bring two south poles together?
8. Complete the saying “Opposite poles _____, and like poles _____.”
9. Why are magnetic forces considered to be non-contact forces?
10. Draw the shape of the magnetic field around the bar magnet below.

Magnetism Homework 2

Tick the correct box to show the result for each test (the first one is an example)

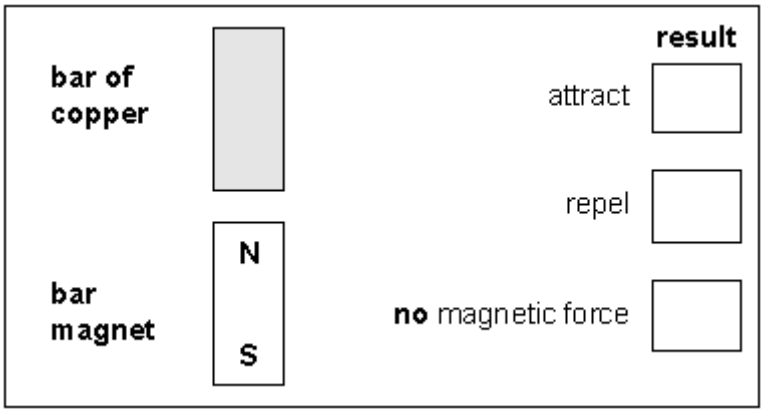
Q1.

David put two bars of iron close to each other.
There was **no** magnetic force between them.
David recorded the result as shown below.



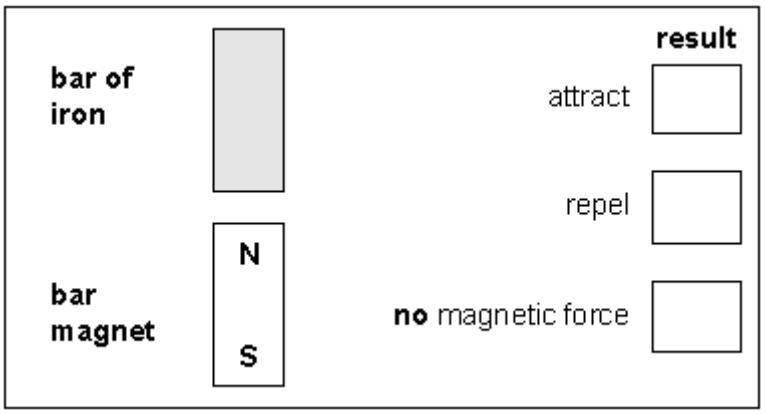
(a) David did three other tests.
Tick the correct box to show the result for each test.

(i)



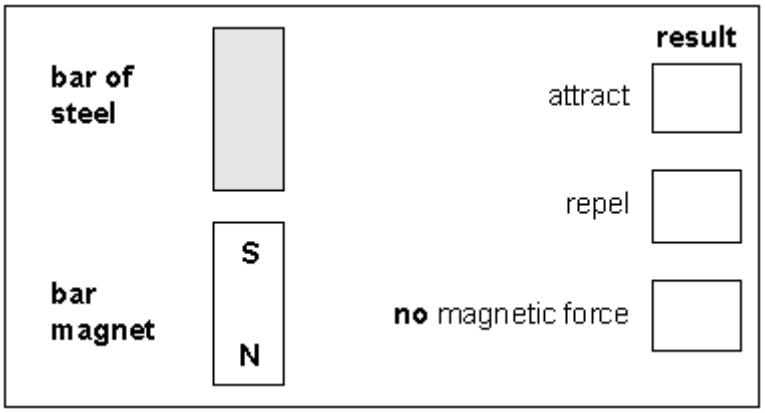
1 mark

(ii)



1 mark

(iii)



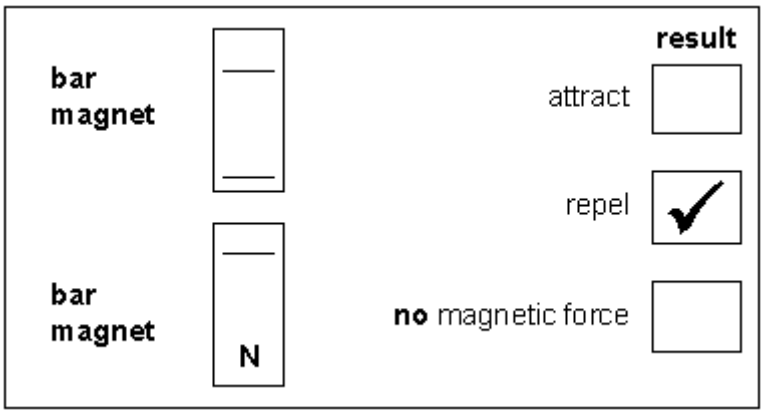
1 mark

(b) David then did two experiments with magnets.

The tick in each box shows David's results in each experiment.

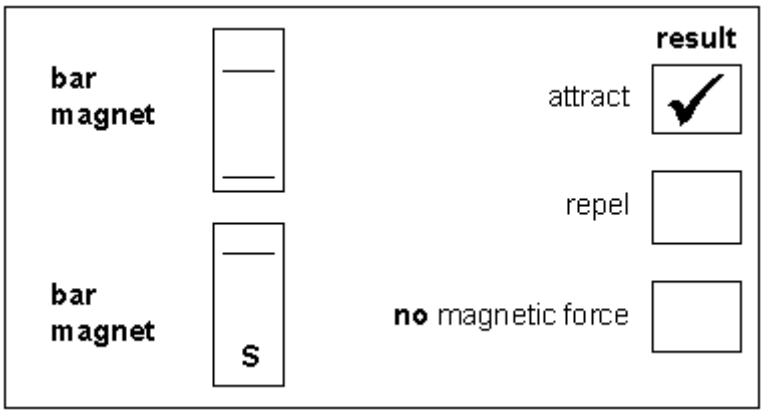
Label the missing poles on **each** magnet to match David's results.

(i)



1 mark

(ii)



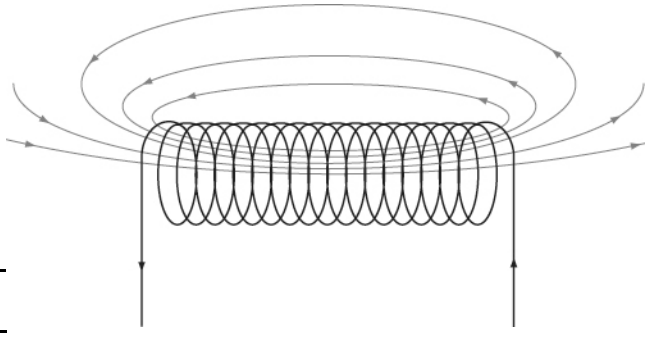
1 mark

maximum 5 marks

Magnetism - Homework 3

Answer the questions below

1 The diagram shows part of the magnetic field around an electromagnet. Complete the diagram.



2 **a** Write down one similarity between an electromagnet and a bar magnet.

_____

_____

b Write down one difference between an electromagnet and a bar magnet.

_____

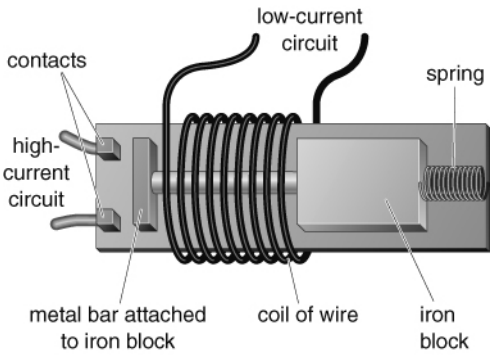
_____

_____

3 Each part of this question describes a change that can be made to an electromagnet. What effect will each change have? Tick the correct boxes.

Change to electromagnet	**Effect on electromagnet**		
	Stronger magnetic field	**Weaker magnetic field**	**Magnetic field changes direction**
a Current through the wire is made smaller.	☐	☐	☐
b The connections to the cell are swapped over.	☐	☐	☐
c The number of coils of wire around the core is increased.	☐	☐	☐
d Current through the wire is increased.	☐	☐	☐

4 The diagram shows a relay. When current flows in the low current circuit the contacts close.



a Explain why this happens. _____

_____

_____

b How do relays improve safety? _____

_____

_____