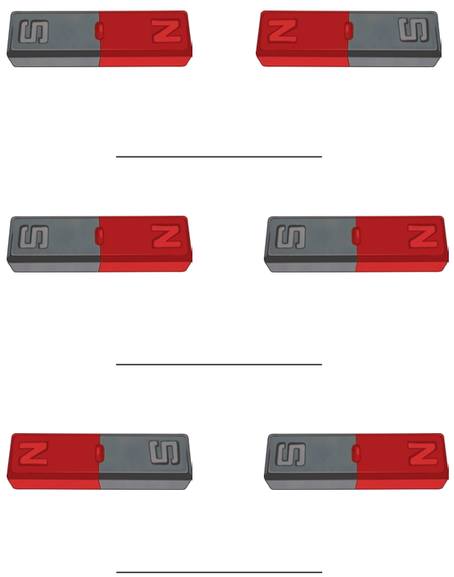
a

Complete the gap fill by choosing from **some** of the following words:
contact, non-contact, east, north, west, south, pole, equator.

Magnetic force is a type of _____ force and it is strongest at the _____ of the magnet. There are two types of magnetic pole: a _____ pole and a _____ pole.

b

What would happen between the poles in each of the magnetic interactions below? Chose from the words '**attraction**' or '**repulsion**'.



_____

_____

_____

c

Define the term 'magnetic field':

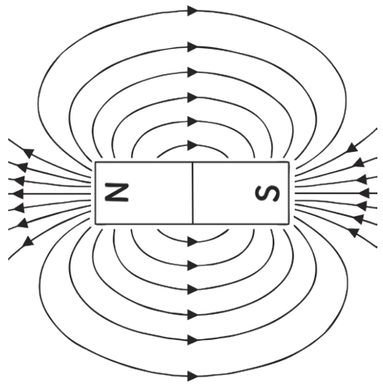
_____

_____

_____

d

Draw the magnetic field lines on the bar magnet below. Remember, lines always start at the _____ pole and point towards the _____ pole.



e

Write 'P' or 'I' next to each statement to indicate whether it refers to a property of a permanent magnet (P) or an induced magnet (I).

- Produce their own magnetic field. ☐
- Become a magnet when placed in a magnetic field. ☐
- Is a temporary magnet. ☐
- Lose their magnetism when removed from a magnetic field. ☐

f

List four magnetic materials:

1. _____
2. _____
3. _____
4. _____

g

Place the steps below in the correct order to explain how you would use a plotting compass to investigate the magnetic field around a magnet. The first step has been done for you:

1. Place the magnet on a blank piece of paper.

☐ Repeat until you have moved to the other pole of the magnet.

☐ Place the plotting compass at one end/above the pole of the magnet.

☐ Mark on the paper where the point of the needle points.

☐ Move the compass to the place you have just marked.

h

In which direction do compass needles always align?

_____

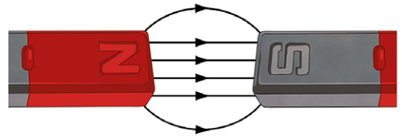
Complete the gap fill:

This is because of the earth's _____. This is possibly caused by the _____ in the earth's core.

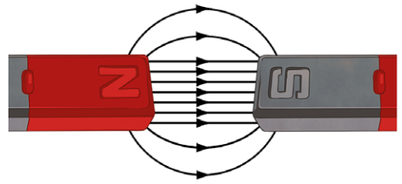
i

Which of these magnets will exert a stronger force on a magnetic material?

A.



B.



_____

Explain your answer:

_____

_____

j

When a current flows through a conducting wire, a magnetic field is produced around the wire. Circle two factors the strength of the magnetic field depends on:

1. size of the poles
2. size of current
3. distance from the wire
4. distance from the equator

k

Notes:

_____

_____

_____

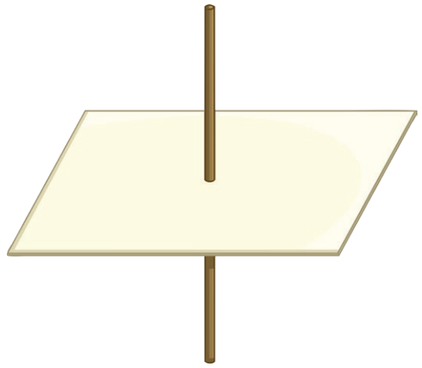
_____

_____

_____

a

A long, straight, conducting wire is placed vertically so that it passes through a horizontal piece of board. Iron filings are sprinkled onto the board. Draw the pattern they would form:



b

State the piece of equipment you could use to investigate the magnetic field you have drawn above:

_____

c

State the method that informs you of the direction of the current in a straight wire.

_____

What do you thumb and fingers represent in this method?

thumb:

_____

fingers:

_____

d

Place the statements below in the correct order to describe how you would use the piece of equipment previously stated, to investigate the magnetic field you have drawn. The first one has been done for you.

1. Place a magnetic compass at one point along the wire.

☐ Move the magnetic compass further along the wire.

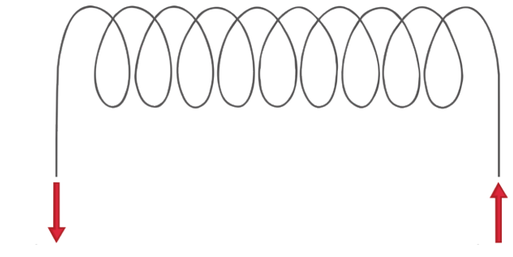
☐ Again, turn the power supply on and off and observe the direction of the compass needle.

☐ Move the compass further away from the wire to see that the magnetic field is weaker.

☐ Turn the power supply on and off and observe the direction of the compass needle.

e

Draw the magnetic field pattern around the solenoid below:



Which other type of magnet produces a similar pattern?

_____

f

What is a solenoid?

_____

_____

_____

g

Describe what happens to the magnetic field around a straight wire when the current is reversed.

_____

_____

h

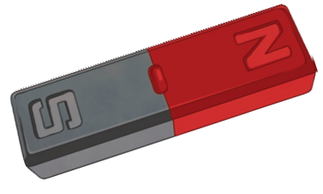
List four ways in which you can make the magnetic field around a solenoid/electromagnet stronger:

1. _____
2. _____
3. _____
4. _____

i

A student draws on paper the field lines around a magnet. They are close together. What does this tell you about the strength of the magnet?

_____



a

Complete the gap fill by choosing from **some** of the following words:
contact, non-contact, east, north, west, south, pole, equator.

Magnetic force is a type of **non-contact** force and it is strongest at the **poles** of the magnet. There are two types of magnetic pole: a **north** pole and a **south** pole.

b

What would happen between the poles in each of the magnetic interactions below? Chose from the words '**attraction**' or '**repulsion**'.

repulsion

attraction

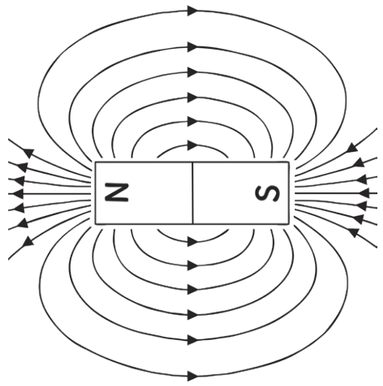
repulsion

c

Define the term 'magnetic field':
The region around a magnet where a force acts on another magnet, or on a magnetic material.

d

Draw the magnetic field lines on the bar magnet below. Remember, lines always start at the **north** pole and point towards the **south** pole.



e

Write 'P' or 'I' next to each statement to indicate whether it refers to a property of a permanent magnet (P) or an induced magnet (I).

- Produce their own magnetic field. **P**
- Become a magnet when placed in a magnetic field. **I**
- Is a temporary magnet. **I**
- Lose their magnetism when removed from a magnetic field. **I**

f

List four magnetic materials:

1. **iron**
2. **steel**
3. **nickel**
4. **cobalt**

g

Place the steps below in the correct order to explain how you would use a plotting compass to investigate the magnetic field around a magnet. The first step has been done for you:

1. Place the magnet on a blank piece of paper.

5. Repeat until you have moved to the other pole of the magnet.

2. Place the plotting compass at one end/above the pole of the magnet.

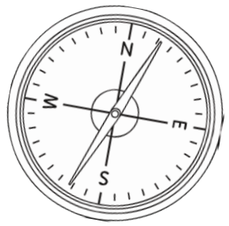
3. Mark on the paper where the point of the needle points.

4. Move the compass to the place you have just marked.

h

In which direction do compass needles always align?

magnetic north



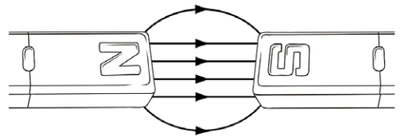
Complete the gap fill:

This is because of the earth's **magnetic field**. This is possibly caused by the **iron** in the earth's core.

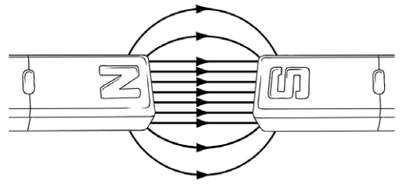
i

Which of these magnets will exert a stronger force on a magnetic material?

A.



B.



B

Explain your answer:

B has more lines of magnetic flux.

j

When a current flows through a conducting wire, a magnetic field is produced around the wire. Circle two factors the strength of the magnetic field depends on:

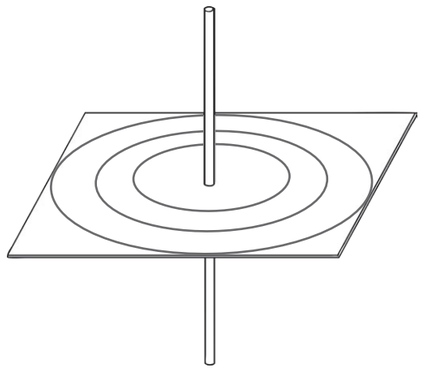
1. size of the poles
2. **size of current**
3. **distance from the wire**
4. distance from the equator

k

Notes:

a

A long, straight, conducting wire is placed vertically so that it passes through a horizontal piece of board. Iron filings are sprinkled onto the board. Draw the pattern they would form:



b

State the piece of equipment you could use to investigate the magnetic field you have drawn above:

plotting compass

c

State the method that informs you of the direction of the current in a straight wire.

Right hand grip method/rule.

What do you thumb and fingers represent in this method?

thumb:
The direction of the current.

fingers:
The direction the field lines should be drawn.

d

Place the statements below in the correct order to describe how you would use the piece of equipment previously stated, to investigate the magnetic field you have drawn. The first one has been done for you.

1. Place a magnetic compass at one point along the wire.

3 Move the magnetic compass further along the wire.

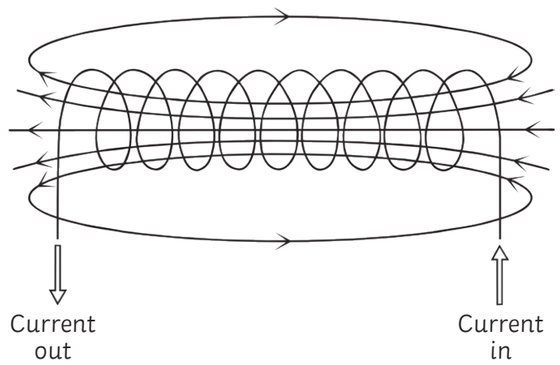
4 Again, turn the power supply on and off and observe the direction of the compass needle.

5 Move the compass further away from the wire to see that the magnetic field is weaker.

2 Turn the power supply on and off and observe the direction of the compass needle.

e

Draw the magnetic field pattern around the solenoid below:



Which other type of magnet produces a similar pattern?

A bar magnet.

f

What is a solenoid?

A solenoid is formed when a long piece of conducting (and insulated) wire is looped into a coiled cylinder.

g

Describe what happens to the magnetic field around a straight wire when the current is reversed.

The magnetic field is also reversed.

h

List four ways in which you can make the magnetic field around a solenoid/electromagnet stronger:

1. **Using a larger current.**
2. **Using an iron core.**
3. **Add more turns to the wire.**
4. **Place the turns of the wire more closely together.**

i

A student draws on paper the field lines around a magnet. They are close together. What does this tell you about the strength of the magnet?

It is a strong magnet.