

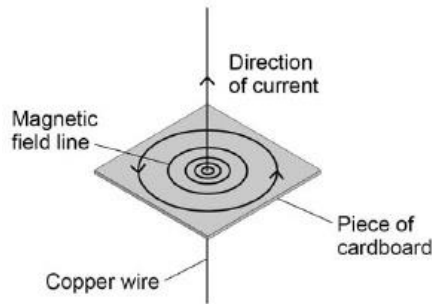
**Physics unit 7 homework – Magnetism and Electromagnetism**

For each of the questions below: -

Highlight the command word if there is one & annotate what the command word means. - Answer the question!

**Q1** Figure 1 shows the magnetic field around a copper wire carrying a current.

**Figure 1**



(a) What do the arrows on the magnetic field line represent?

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(1)

(b) Complete the sentence.

As the distance from the copper wire increases, the magnetic field strength \_\_\_\_\_ .

(1)

(c) Suggest how the field lines on **Figure 1** show the variation in field strength.

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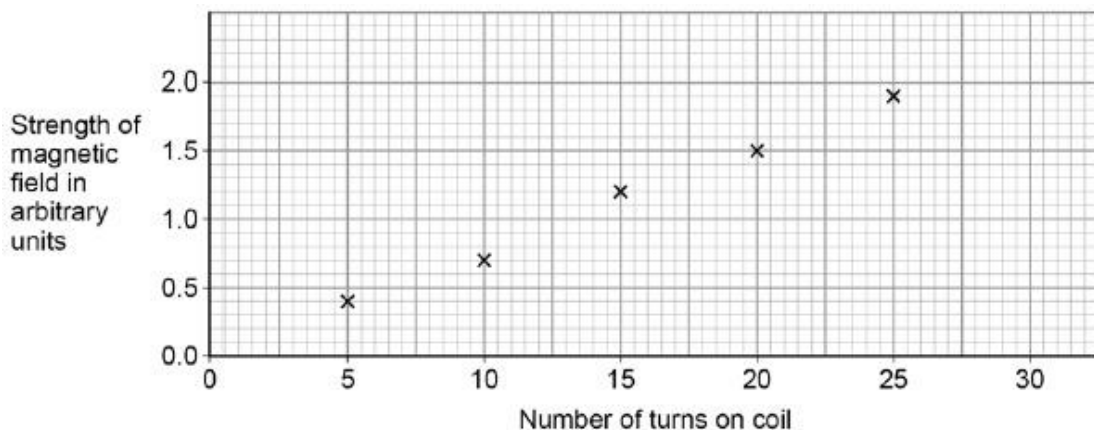
(2)

A student coiled the copper wire a different number of times to form a solenoid.

Each time the student measured the strength of the magnetic field inside the solenoid.

**Figure 2** shows the results.

**Figure 2**



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(d) Draw a line of best fit on **Figure 2**.

(1)

(e) Determine the increase in strength of magnetic field when the number of turns on the coil is changed from 12 to 18

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Increase in strength of magnetic field = \_\_\_\_\_ arbitrary units

(2)

(f) Describe two way the strength of the magnetic field be increased?

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(2)

(g) **Figure 3** shows the north and south poles of a solenoid.

**Figure 3**



Draw field lines to show the magnetic field around the solenoid.

(2)

(h) How can the solenoid be made into an electromagnet?

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(1)

2) The area around a magnet is called the magnetic field.

(a) The Earth has a magnetic field.

What causes the Earth's magnetic field?

Tick **one** box.

The movement of liquid iron in the Earth's outer core

**Physics unit 7 homework – Magnetism and Electromagnetism**

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The gravitational field of the Earth

The permanent magnet in the Earth's core

(1)

(b) Look at **Figure 1**.

**Figure 1**

**Opposite poles brought together**



**Same poles brought together**



What will happen in each case when the poles of two magnets are brought close together?

Opposite poles brought together \_\_\_\_\_

\_\_\_\_\_

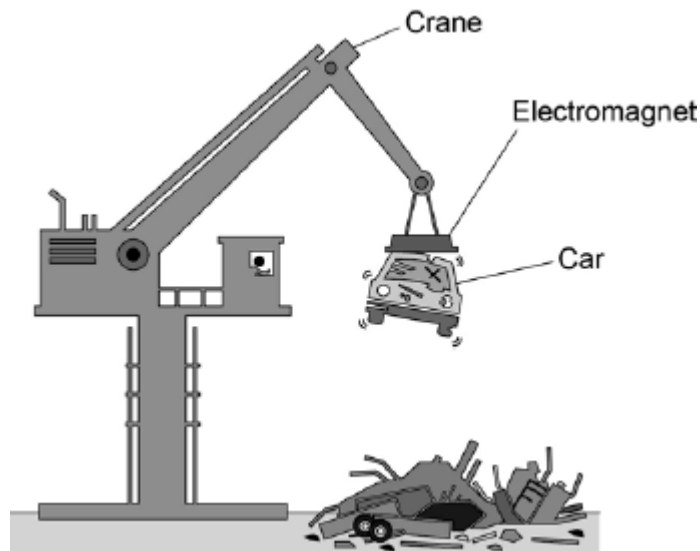
Same poles brought together \_\_\_\_\_

\_\_\_\_\_

(2)

(c) **Figure 2** shows an electromagnet being used to lift a car in a scrapyard.

**Figure 2**



**Physics unit 7 homework – Magnetism and Electromagnetism**

*For each of the questions below: -*

*Highlight the command word if there is one & annotate what the command word means. - Answer the question!*

An electromagnet is a solenoid.

Explain why it is better to use an electromagnet rather than a permanent magnet in a scrapyards.

You should include a comparison of the properties of electromagnets and permanent magnets in your answer.

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**(4)**

**3)** This question is about magnetism.

(a) State two materials that are magnetic?

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**(2)**

(b) Describe how you could find the magnetic field pattern of a permanent bar magnet.

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**(3)**