OXFORD AQA

INTERNATIONAL QUALIFICATIONS

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

INTERNATIONAL GCSE

PHYSICS

Paper 1

Wednesday 7 May 2025 07:00 GMT Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a pencil and a ruler
- a scientific calculator
- a protractor
- the Physics Equations Sheet (enclosed).

Instructions
- Use black ink or black ball-point pen.
- Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions in the spaces provided.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- In all calculations, show clearly how you worked out your answer.

Information
- The maximum mark for this paper is 90.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
TOTAL	

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ANSWER IN THE SPACES PROVIDED

Answer **all** questions in the spaces provided.

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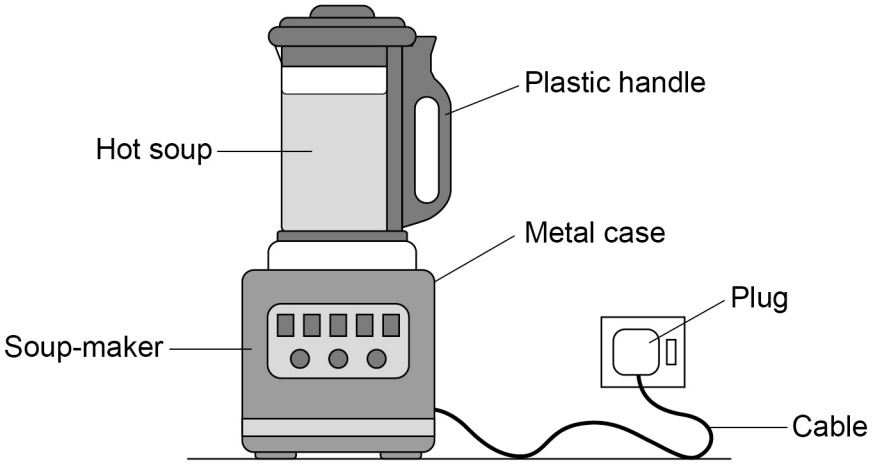
0 1 **Figure 1** shows an electrical appliance called a soup-maker.

Figure 1



0 1 . 1 In the soup-maker, a blade spins to slice food and a heating element cooks the food.

Complete the sentences to describe the energy transfers that happen in the soup-maker.

[2 marks]

From electrical energy to _____ energy.

From electrical energy to _____ energy.

Question 1 continues on the next page

Do not write outside the box

A student makes onion soup using the soup-maker.

0 1 . 2 The soup-maker is used for a time of 20 minutes.

What is 20 minutes in seconds?

[1 mark]

Tick (✓) **one** box.

200 seconds ☐

1200 seconds ☐

3600 seconds ☐

72 000 seconds ☐

0 1 . 3 The soup-maker has a power of 800 W.

Calculate the energy transferred by the soup-maker in 20 minutes.

Use your answer to Question **01.2** and the equation:

energy transferred = power × time

[2 marks]

Energy transferred = _____ J

Do not write outside the box

0 1 . 4 The student uses 0.40 kg of onions.

Calculate the energy required to increase the temperature of the onions by 75 °C.

specific heat capacity of onion = 1800 J/kg °C

Use the equation:

energy = mass × specific heat capacity × temperature change

[2 marks]

Energy = _____ J

0 1 . 5 The energy transferred by the soup-maker is greater than the energy needed to heat the onions.

Suggest why.

[1 mark]

Question 1 continues on the next page

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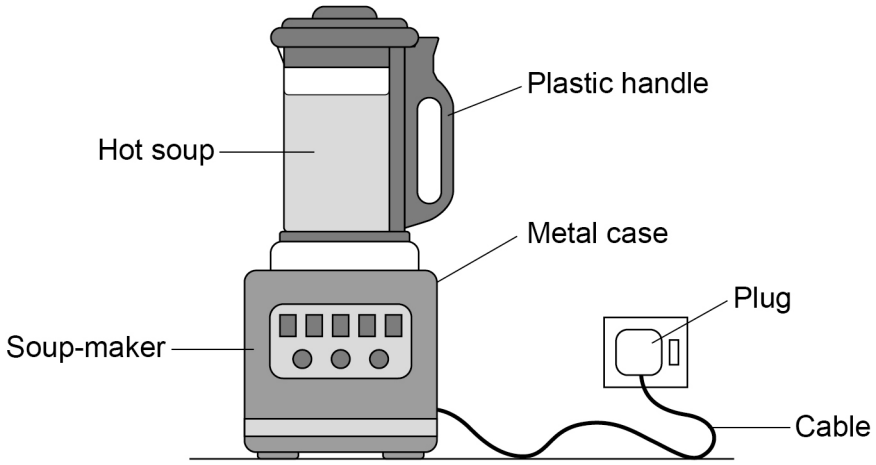
Figure 1 is repeated below.

Figure 1



The electric soup-maker in **Figure 1** has safety features that protect the user.

0 1 . 6 The cable that connects the soup-maker to the mains electricity supply contains three wires.

What is the name of the wire that is connected to the metal case of the soup-maker?

[1 mark]

Tick (✓) **one** box.

Earth ☐

Live ☐

Neutral ☐

Do not write outside the box

0 1 . 7 The plug in **Figure 1** contains a fuse.

Why does the plug contain a fuse?

[1 mark]

Tick (✓) **one** box.

To disconnect the circuit if the current is too large ☐

To increase the resistance so the current is lower ☐

To make sure the current is constant ☐

0 1 . 8 The soup-maker in **Figure 1** has a plastic handle.

Explain how the plastic handle prevents the user from being burnt.

[2 marks]

12

Turn over for the next question

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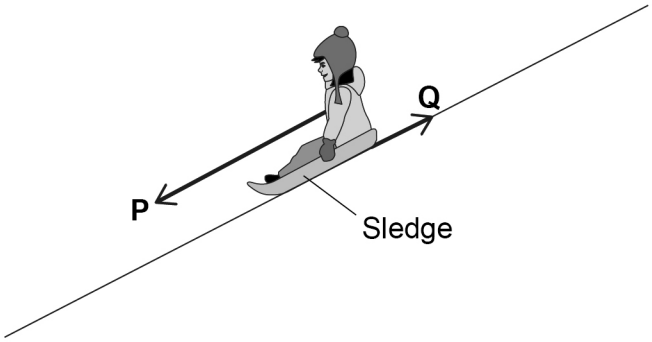
0 2 **Figure 2** shows a child sitting on a sledge.

The sledge is sliding down a hill that is covered in snow.

Figure 2



Two forces, force **P** and force **Q**, act on the child and sledge.

0 2 . 1 As the child moves down the hill, the child accelerates.

Give the reason why the child accelerates.

You should refer to force **P** and force **Q** in your answer.

[1 mark]

Do not write outside the box

0 2 . 2 The average acceleration of the child is 2.5 m/s^2.

Calculate the time taken for the velocity of the child to increase by 4.6 m/s.

Use the Physics Equations Sheet.

[3 marks]

Time taken = _____ s

0 2 . 3 After moving a short distance, the child moves at a constant velocity.

What happens to the speed and direction of the child when the velocity is constant?

[1 mark]

Tick (✓) **one** box.

- The speed changes and the direction changes. ☐
- The speed changes and the direction stays the same. ☐
- The speed stays the same and the direction changes. ☐
- The speed stays the same and the direction stays the same. ☐

Question 2 continues on the next page

Do not write outside the box

As the child moves down the hill, the sledge exerts a force on the snow.

The force causes some of the snow to change from a solid to a liquid.

0 2 . 4 What is the name of the change of state when a solid changes to a liquid?

[1 mark]

---

0 2 . 5 Which of the following describes the movement and arrangement of the particles in a **solid**?

[1 mark]

Tick (✓) **one** box.

Free to slide past each other and close together ☐

Moving very rapidly and widely spaced ☐

Stationary in a regular pattern ☐

Vibrating about fixed positions ☐

0 2 . 6 Which of the following describes the movement and arrangement of the particles in a **liquid**?

[1 mark]

Tick (✓) **one** box.

Free to slide past each other and close together ☐

Moving very rapidly and widely spaced ☐

Stationary in a regular pattern ☐

Vibrating about fixed positions ☐

Do not write outside the box

0 2 . 7 528 000 J of energy is transferred to the snow to change it from a solid to a liquid.

specific latent heat of fusion of snow = 330 000 J/kg

Calculate the mass of the snow that changes from a solid to a liquid.

Use the Physics Equations Sheet.

[3 marks]

Mass = _____ kg

11

Turn over for the next question

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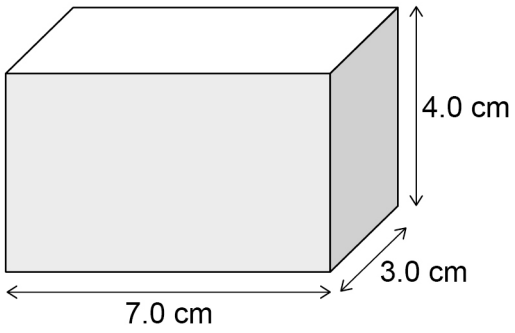
0 3 The stability of an object depends on the position of its centre of mass and the size of its base.

0 3 . 1 **Figure 3** shows three faces of a solid wooden block. Each face has a different surface area.

Figure 3



The stability of the block can be changed by turning it so that a different face of the block becomes the base.

Calculate the surface area of the base of the block when the block has the **least** stability.

Give the unit.

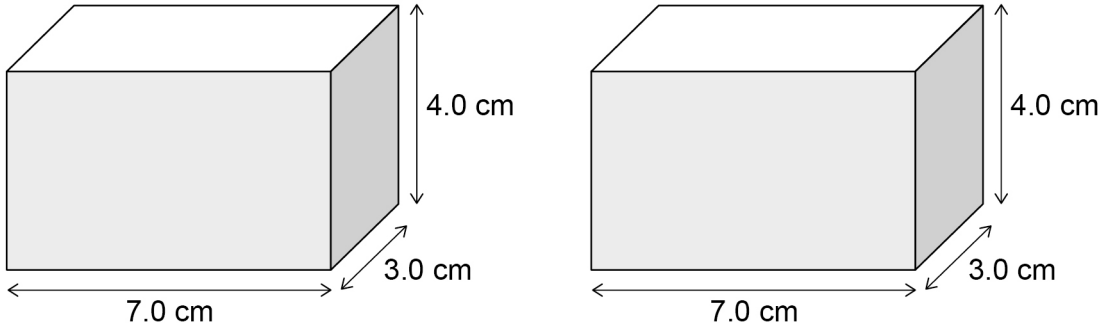
[3 marks]

Surface area = _____ Unit _____

Do not write outside the box

0 3 . 2 **Figure 4** shows two solid blocks that are made from different materials.

Figure 4



Block A **Block B**

Block **A** has a greater mass than block **B**.

Both blocks are on the same face.

How does the stability of block **A** compare to the stability of block **B**?

[1 mark]

Tick (✓) **one** box.

Block **A** is less stable than block **B**. ☐

Block **A** is as stable as block **B**. ☐

Block **A** is more stable than block **B**. ☐

Question 3 continues on the next page

Turn over ►

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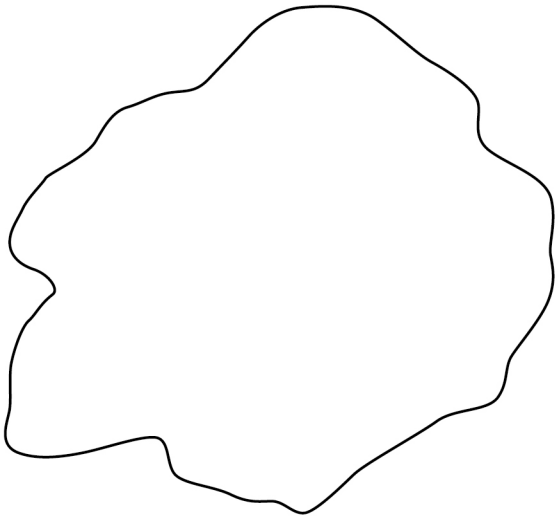
Figure 5 shows a thin piece of card that has an irregular shape.

Figure 5



0 3 . 3 Describe a method that could be used to determine the position of the centre of mass of the card.

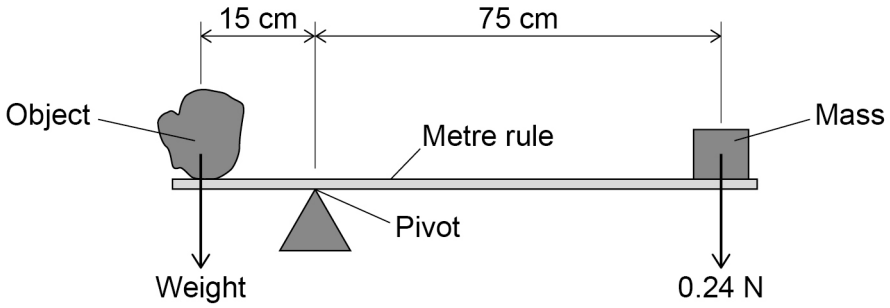
[4 marks]

Extra space

A student used the turning effect of a force to determine the weight of an object.

Figure 6 shows the apparatus.

Figure 6



The metre rule is balanced.

0 3 . 4 Determine the weight of the object in **Figure 6**.

[3 marks]

Weight = _____ N

Question 3 continues on the next page

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The student repeated the measurements several times and calculated a mean value of weight.

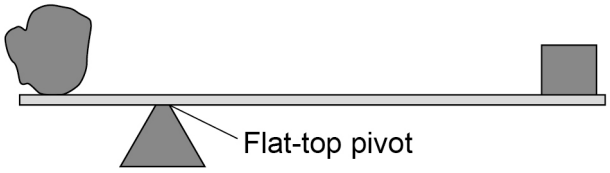
0 3 . 5 What is the advantage of repeating measurements and calculating a mean?

[1 mark]

0 3 . 6 The student replaced the original pivot shown in **Figure 6** on page 15 with a flat-top pivot.

Figure 7 shows the metre rule balanced on the flat-top pivot.

Figure 7



Give **one** advantage and **one** disadvantage of using the flat-top pivot instead of the original pivot.

[2 marks]

Advantage of flat-top pivot

Disadvantage of flat-top pivot

14

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Turn over for the next question

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0 4 The Sun is the star at the centre of the solar system.

0 4 . 1 Planets orbit the Sun.

Name **two** other objects that orbit the Sun.

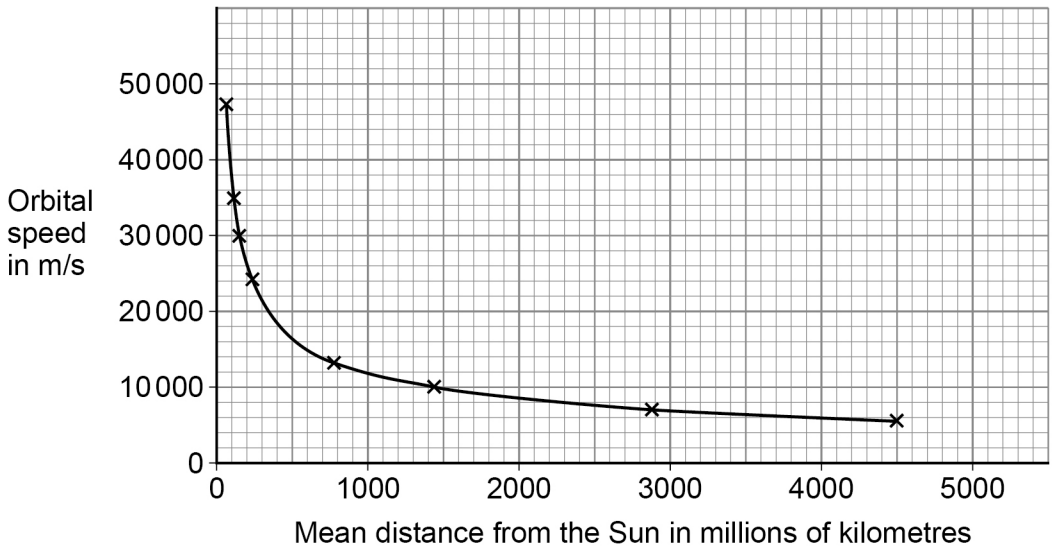
[2 marks]

1 _____

2 _____

Figure 8 shows how the distance each planet is from the Sun affects the orbital speed of the planet.

Figure 8



Each of the 8 planets in the solar system are plotted on **Figure 8**.

- The 4 planets nearest to the Sun are made of rock.
- The 4 planets furthest from the Sun are made of gas.

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0 4 . 2 Earth is the third nearest **rock** planet to the Sun.

What is the orbital speed of the Earth?

Use **Figure 8**.

[1 mark]

Orbital speed = _____ m/s

0 4 . 3 Jupiter is the nearest **gas** planet to the Sun.

What is the mean distance of Jupiter from the Sun?

Use **Figure 8**.

Give your answer in metres and in standard form.

[2 marks]

Mean distance (in standard form) = _____ m

0 4 . 4 The orbital speeds of the planets made of rock and the orbital speeds of the planets made of gas are different.

Explain why.

Use **Figure 8**.

[3 marks]

Question 4 continues on the next page

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The universe contains thousands of millions of galaxies.

0 4 . 5 What is the name of the galaxy that contains the Sun?

[1 mark]

The light detected on Earth from other galaxies shows an increase in wavelength.

0 4 . 6 What name is given to the change in wavelength when a source of waves is moving relative to an observer?

[1 mark]

0 4 . 7 What is the relationship between the increase in wavelength detected and the distance a galaxy is from Earth?

[1 mark]

0 4 . 8 The increase in wavelength provides evidence for the Big Bang theory.

Scientists have also observed that the universe is full of electromagnetic radiation left over from the Big Bang.

What name is given to this radiation?

[1 mark]

0 4 . 9 How many years ago do scientists believe the Big Bang happened?

[1 mark]

13

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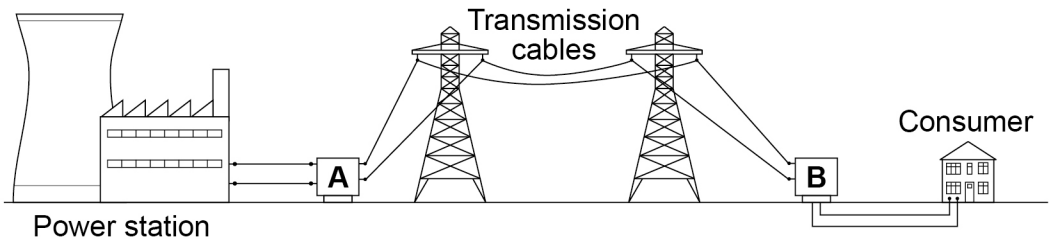
0 5 **Figure 9** shows how electricity generated in a power station is distributed to consumers.

Figure 9



0 5 . 1 Give the reason why electricity is distributed by the transmission cables at a very high voltage.

[1 mark]

0 5 . 2 Give the reason why the voltage is reduced before the electricity reaches consumers.

[1 mark]

0 5 . 3 **A** and **B** in **Figure 9** are transformers.

What types of transformers are transformer **A** and transformer **B**?

[1 mark]

Transformer **A** _____

Transformer **B** _____

Question 5 continues on the next page

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0 5 . 4 A basic transformer has 12 turns on the primary coil and 480 turns on the secondary coil.

The potential difference across the primary coil is 35 V.

Calculate the potential difference across the secondary coil.

Use the Physics Equations Sheet.

[3 marks]

Potential difference across the secondary coil = _____ V

0 5 . 5 A different transformer is 100% efficient.

The potential differences across the coils of the transformer have the following ratio:

$$\frac{V_p}{V_s} = 15$$

The current in the primary coil is 560 mA.

Calculate the current in the secondary coil.

[4 marks]

Current in the secondary coil = _____ A

Do not write outside the box

0 5 . 6 Explain how the current in the secondary coil would be different if the transformer was **not** 100% efficient.

Use ideas about power and energy in your answer.

[4 marks]

Extra space

14

Turn over for the next question

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0 6 The isotope plutonium-239 is radioactive.

0 6 . 1 A nucleus of plutonium-239 decays by emitting an alpha particle.

Describe how the nucleus changes when it emits an alpha particle.

[2 marks]

0 6 . 2 Compare the properties of alpha radiation, beta radiation and gamma radiation.

You should compare:

- ionising power
- penetration through materials
- range in air.

[6 marks]

Do not write outside the box

Extra space

0 6 . 3 Nuclei of plutonium-239 can also undergo a nuclear fission chain reaction.

Describe a nuclear fission chain reaction.

[4 marks]

Extra space

12

Turn over for the next question

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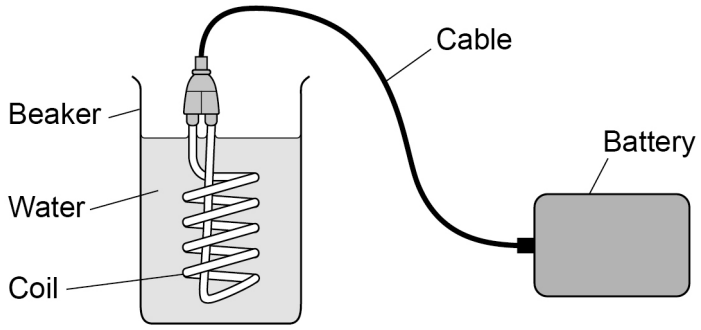
0 7 Current-carrying coils of wire are used in many different appliances.

Figure 10 shows a coil of wire that is connected to a battery.

The coil of wire is used to heat water.

Figure 10



0 7 . 1 Explain why charge flow in the coil increases the temperature of the coil.

[3 marks]

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0 7 . 2 The coil is switched on for 3.0 minutes.

The charge flow in the coil is 972 C.

The potential difference across the coil is 14 V.

Calculate the power of the coil.

Give your answer to 2 significant figures.

[6 marks]

Power (2 significant figures) = _____ W

Question 7 continues on the next page

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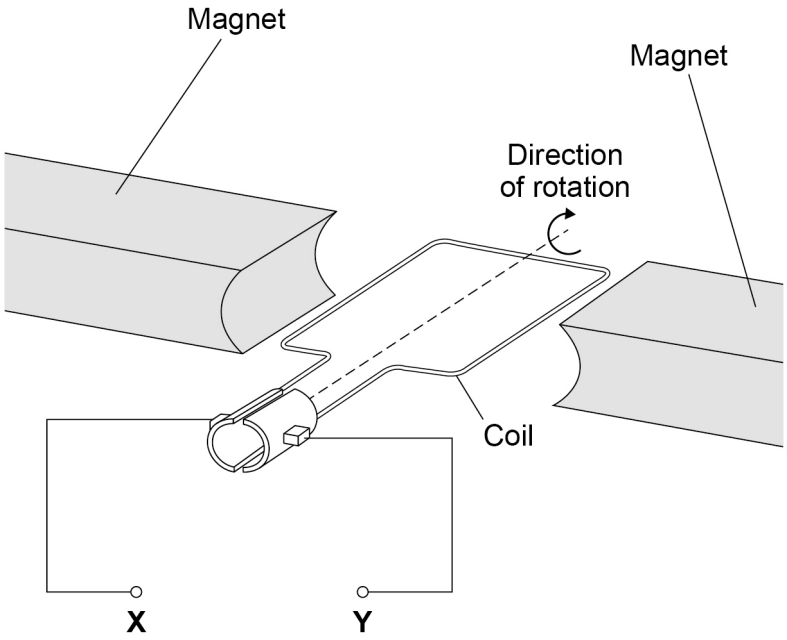
Figure 11 shows a current-carrying coil that is designed to make an object move.

When there is a current in the coil, the coil will rotate because forces are exerted on the coil.

Figure 11



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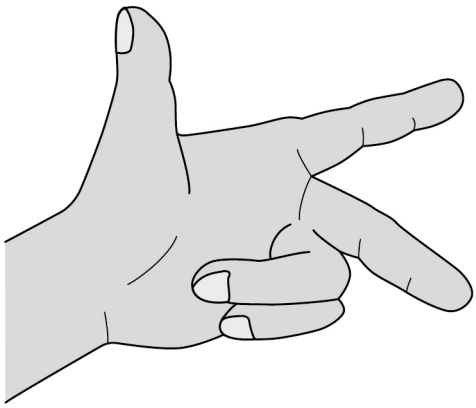
Fleming's left-hand rule can be used to determine the poles of the magnets.

0 7 . 3 Complete **Figure 12** to show what is represented by the fingers when using Fleming's left-hand rule.

[3 marks]

Figure 12

Direction of _____



Direction of _____

Direction of _____

0 7 . 4 Complete **Figure 11**.

You should:

- draw the circuit symbol for a battery between **X** and **Y**
- add arrows to show the direction of the current in the coil for the battery you have drawn
- use Fleming's left-hand rule to label the correct poles of the magnets.

[2 marks]

14

END OF QUESTIONS

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ANSWER IN THE SPACES PROVIDED

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