

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				
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Pearson Edexcel International GCSE

Wednesday 10 June 2026

Morning (Time: 2 hours 30 minutes)

Paper reference **4MB1/02R**

Mathematics B

PAPER 2R



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators may be used.**

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
- Without sufficient working, correct answers may be awarded no marks.

Turn over ►

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Answer ALL TWELVE questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

- 1 Anne owns 2400 grams of an alloy made of gold, silver and copper such that
weight of gold : weight of silver : weight of copper = 15 : 3 : 2

(a) Calculate the weight of gold in 2400 grams of the alloy.

(2)

Anne sells 2400 grams of the alloy to Geoff at a rate of £29.51 per gram.
Of the money Anne receives, she is charged 10% commission.

(b) Show that Anne receives £63 700 to 3 significant figures, after she pays commission.

(3)

Anne originally paid £56 000 for the alloy.

(c) Calculate the percentage profit, to 3 significant figures, that Anne makes.

(2)

Geoff uses 3600 grams of a different alloy to make n pieces of jewellery.

$\frac{3}{4}$ of the pieces he makes are rings each weighing 6 grams.

$\frac{1}{6}$ of the pieces he makes are bracelets each weighing 24 grams.

The remainder of the 3600 grams of alloy is used to make necklaces each weighing 78 grams.

(d) Find the value of n

(4)

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Question 1 continued

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Question 1 continued

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(Total for Question 1 is 15 marks)



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2 Akine notices that the rate at which water leaves the hot tap of his bath is different to the rate at which water leaves the cold tap of his bath.

The rate at which water leaves each tap is constant.

When full, the bath holds 240 litres of water.

It takes 12 minutes to fill the bath using just the cold tap.

It takes 15 minutes to fill the bath using just the hot tap.

- (a) Calculate the time taken to fill Akine’s bath with water using both the hot tap and the cold tap at the same time.
Give your answer in minutes and seconds. (4)

Water leaves the bath at a constant rate of 100 litres per minute.

- (b) Calculate the time taken for the 240 litres of water to leave the bath.
Give your answer in minutes and seconds. (2)

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Question 2 continued

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(Total for Question 2 is 6 marks)



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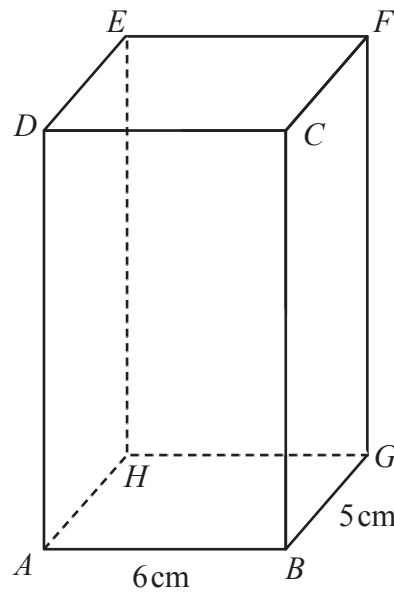
Diagram **NOT**
accurately drawn**Figure 2**

Figure 2 shows a cuboid $ABCDEFGH$ with horizontal base $ABGH$

$$AB = 6 \text{ cm} \quad BG = 5 \text{ cm}$$

Given that the surface area of the cuboid is 236 cm^2

- (a) show that the length of BC is 8 cm (2)
- (b) Calculate, in cm to one decimal place, the length of AF (3)



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Question 3 continued

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(Total for Question 3 is 5 marks)



4 A particle P is moving along a straight line.

At time t seconds the displacement, s metres, of P from a fixed point O on the line is given by

$$s = 5t^3 - \frac{1}{4}t^4 \qquad t \geqslant 0$$

At time t seconds the acceleration of P is $a \text{ m/s}^2$

Find the value of a at the instant when P changes direction and starts moving towards the point O
Show all your working.

(5)

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Question 4 continued

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(Total for Question 4 is 5 marks)



5 Figure 3 shows two shapes, A and B

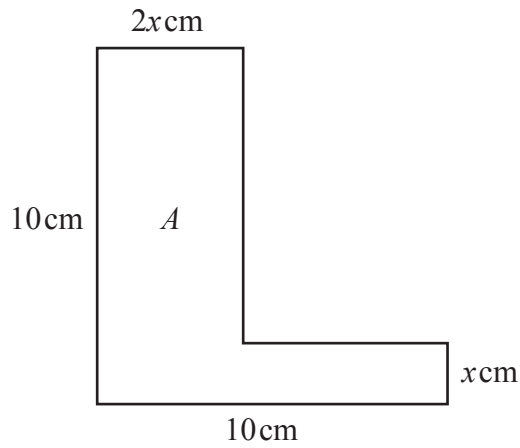


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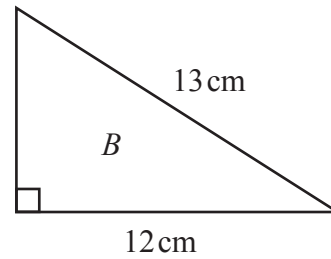


Figure 3

The corners of shape A are all right angles.

Shape B is a right-angled triangle.

The area of shape A is equal to the area of shape B

Find, to 3 significant figures, the value of x

(6)

$$\left[\text{Solutions of } ax^2 + bx + c = 0 \text{ are } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \right]$$



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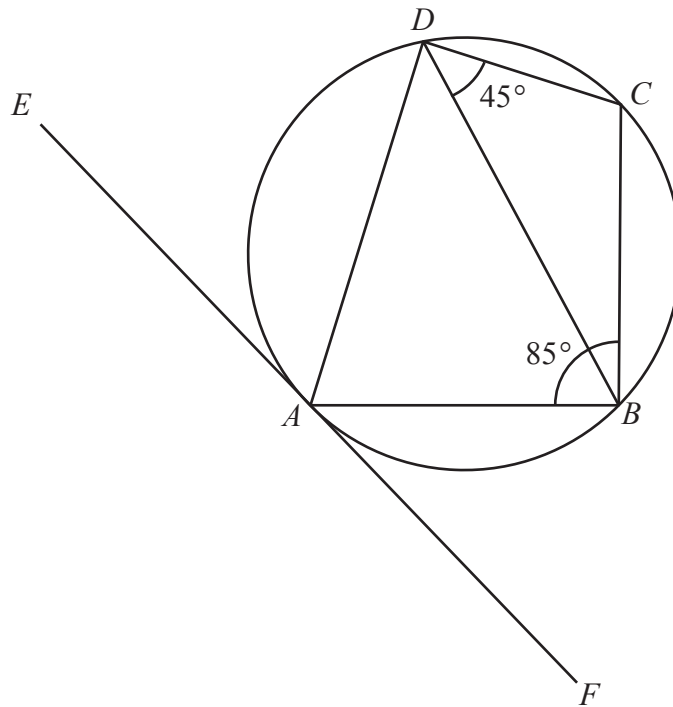
Question 5 continued

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(Total for Question 5 is 6 marks)



6

Diagram **NOT**
accurately drawn**Figure 4**

In Figure 4 $ABCD$ is a quadrilateral such that the points A , B , C and D lie on a circle.

EAF is the tangent to the circle at the point A

$$\angle BDC = 45^\circ \quad \angle ABC = 85^\circ \quad BD = 22 \text{ cm} \quad BC = 17 \text{ cm}$$

- (a) Find the size, to the nearest degree, of the obtuse angle BCD (3)
- (b) Find the size, to the nearest degree, of $\angle BAD$ (1)
- (c) Find the size, to the nearest degree, of $\angle BAF$ (3)
Give a reason for each stage of your working.

$$\left(\text{Sine rule : } \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \right)$$



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Question 6 continued

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(Total for Question 6 is 7 marks)



7 Given that $3^{3a} = \frac{9^{2b}}{27}$

(a) show that $3a = 4b - 3$

(2)

Given that $4^a = \frac{1}{8^{2-b}}$

(b) show that $2a = 3b - 6$

(2)

(c) Solve the simultaneous equations

$$3x = 4y - 3$$

$$2x = 3y - 6$$

Show clear algebraic working.

(4)

(d) Hence write down the value of a and the value of b that satisfy

$$3^{3a} = \frac{9^{2b}}{27} \quad \text{and} \quad 4^a = \frac{1}{8^{2-b}}$$

(1)

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Question 7 continued

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(Total for Question 7 is 9 marks)



- 8 A bag contains only red counters, blue counters and green counters.

The bag contains 15 counters.

There are 5 red counters and 3 blue counters.

A counter is taken at random from the bag.

- (a) Show that the probability of this counter being green is $\frac{7}{15}$ (2)

A second counter is taken at random from the same bag without replacing the first counter.

- (b) Complete the tree diagram on the opposite page. (3)
- (c) Calculate the probability that at least one of the two counters taken is green. (3)

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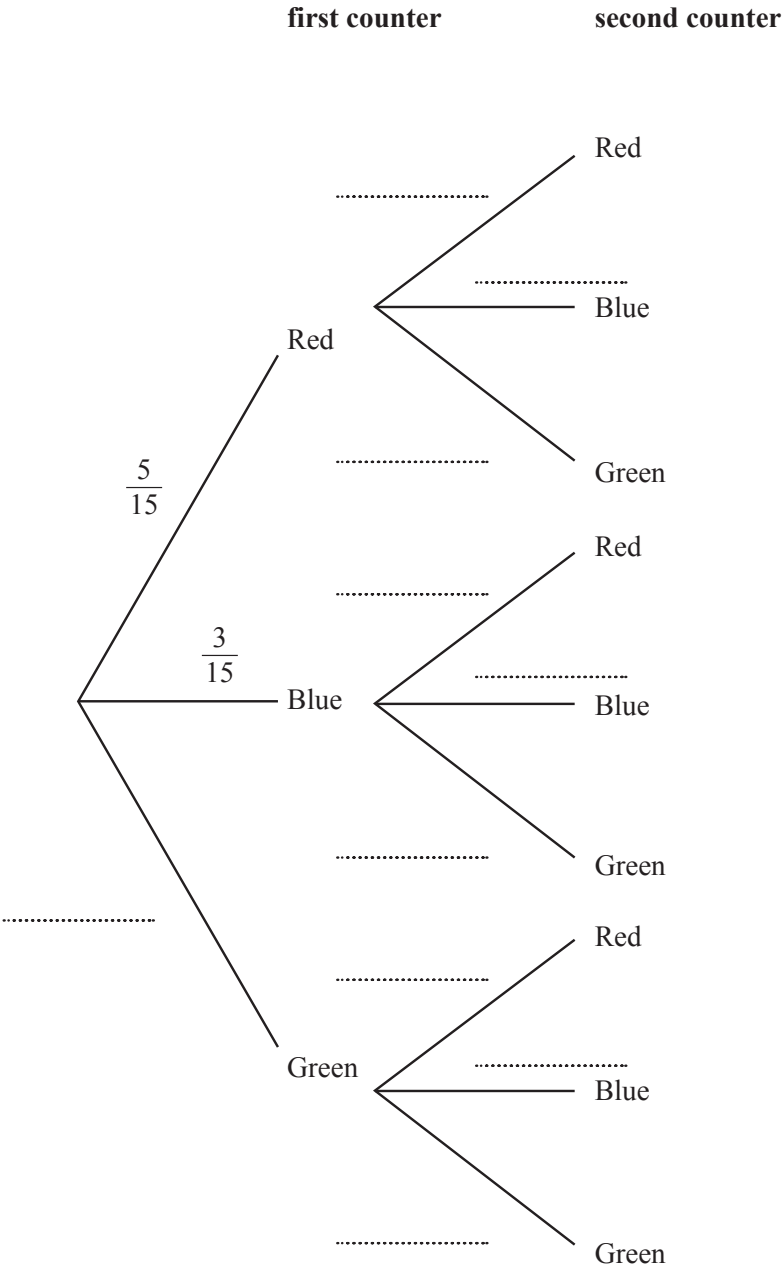
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Question 8 continued



(Total for Question 8 is 8 marks)

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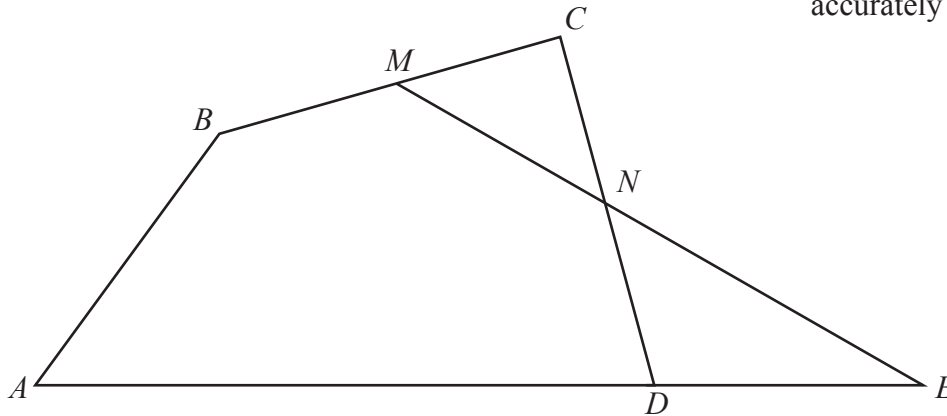


Figure 5

Figure 5 shows a quadrilateral $ABCD$ such that

$$\overrightarrow{AD} = 7\mathbf{a} \quad \overrightarrow{BC} = 4\mathbf{a} + 2\mathbf{b} \quad \overrightarrow{AB} = 5\mathbf{b}$$

M is the midpoint of BC and N is the midpoint of CD

(a) Find, as a simplified expression in terms of $\mathbf{a}$ and $\mathbf{b}$

(i) $\overrightarrow{MC}$ (1)

(ii) $\overrightarrow{CD}$ (2)

(iii) $\overrightarrow{MN}$ (2)

The point E is such that MNE and ADE are straight lines.

(b) Using a vector method, find $\overrightarrow{BE}$ as a simplified expression in terms of $\mathbf{a}$ and $\mathbf{b}$ (4)

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Question 9 continued

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(Total for Question 9 is 9 marks)

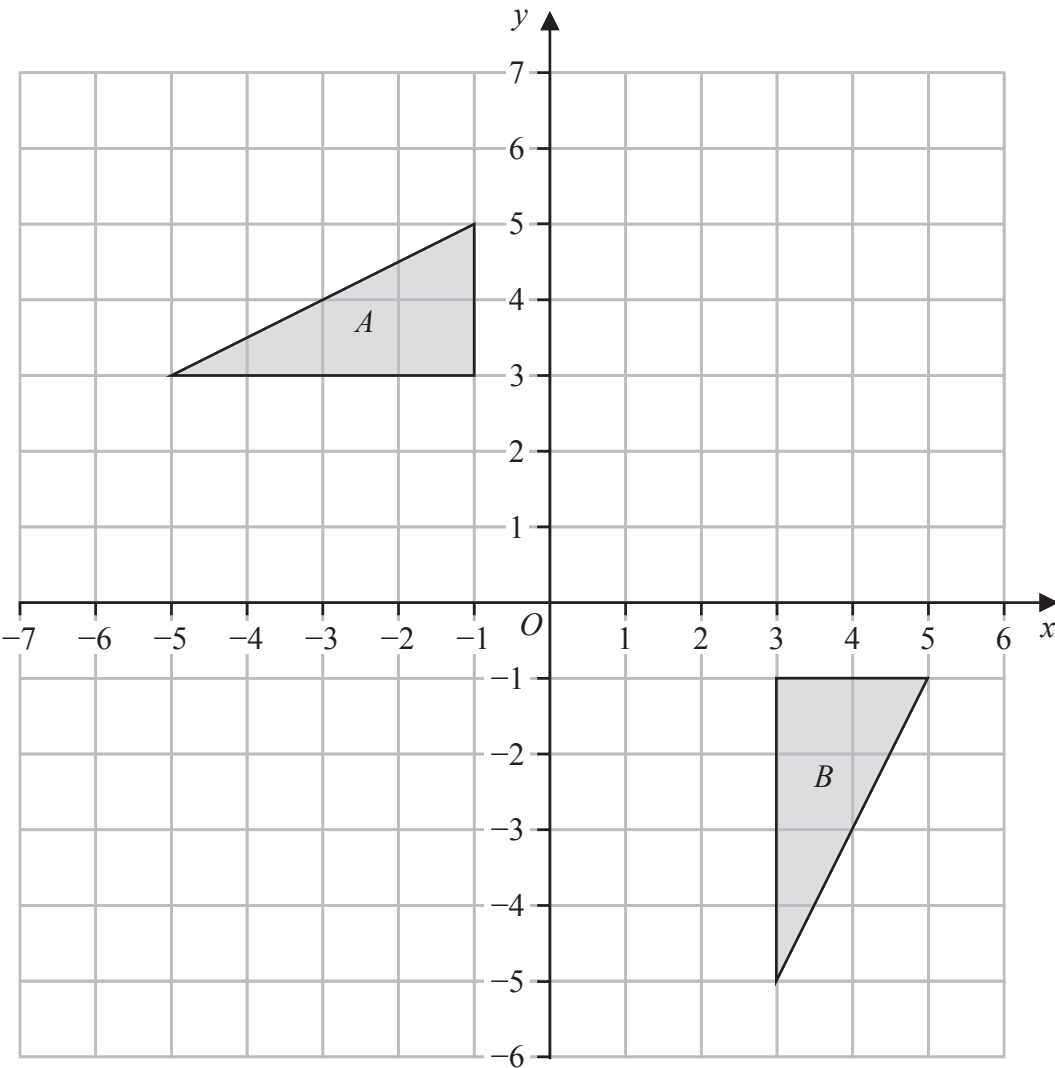


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Question 10 continued



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Question 10 continued

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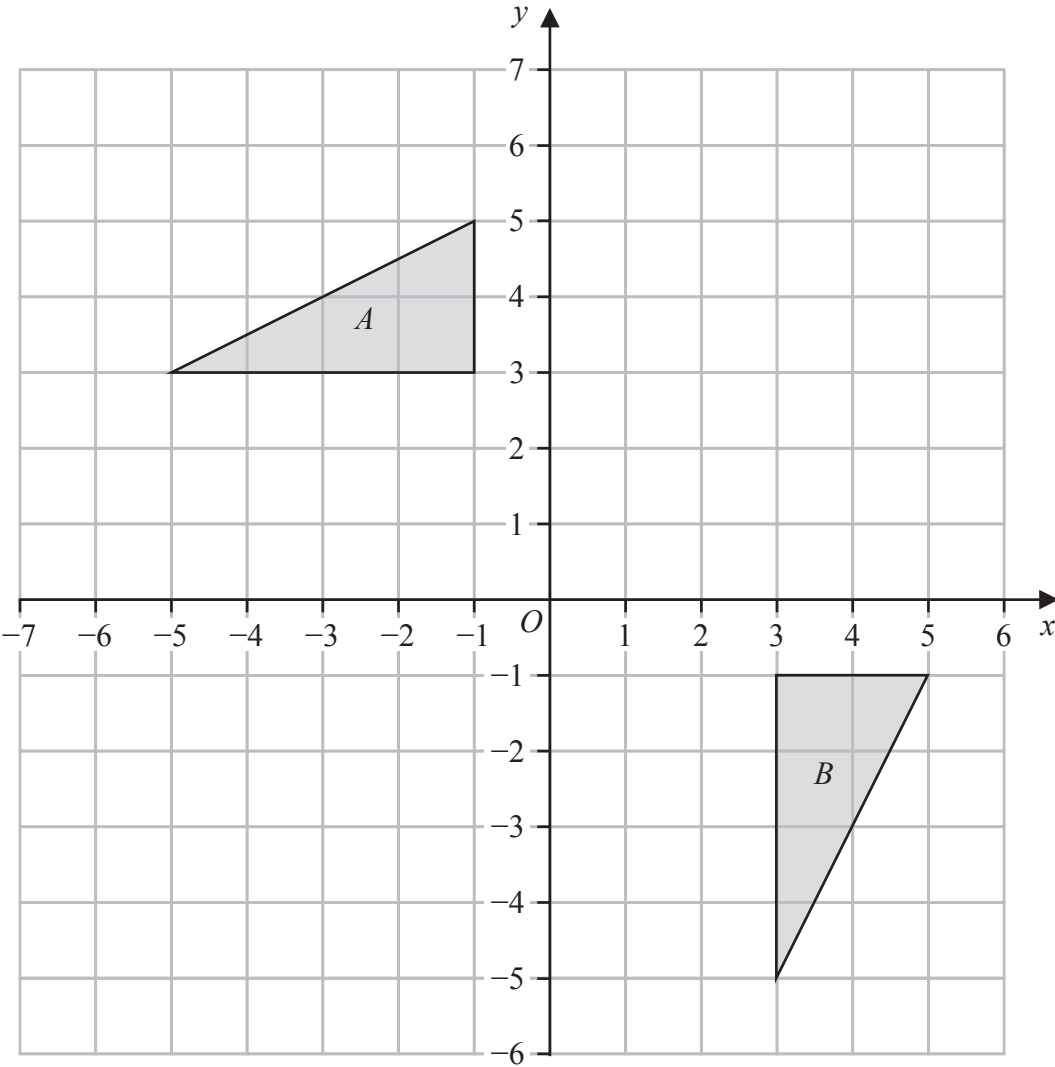
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Question 10 continued

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Question 11 continued

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Question 11 continued

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Question 11 continued

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(Total for Question 11 is 12 marks)



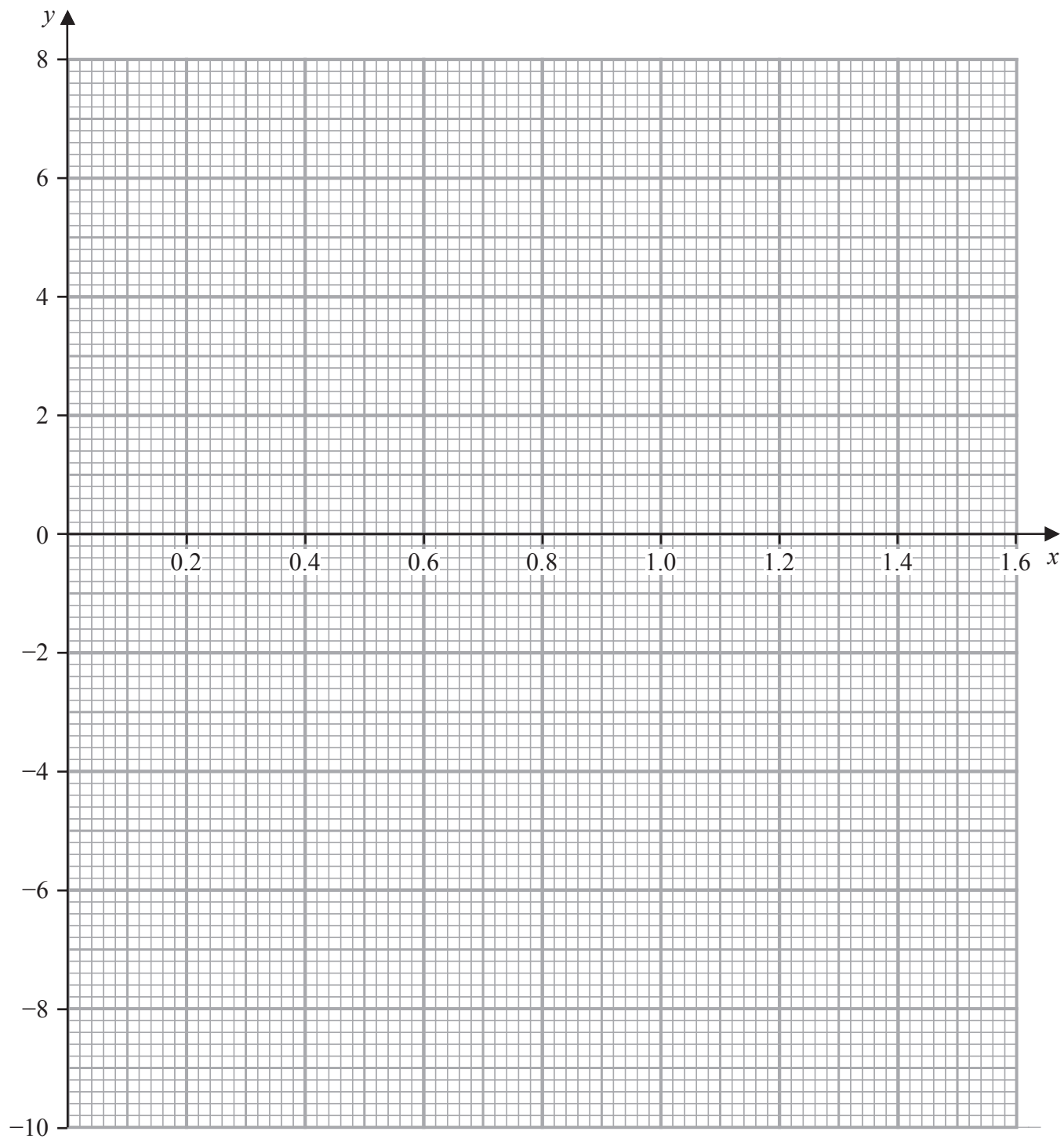


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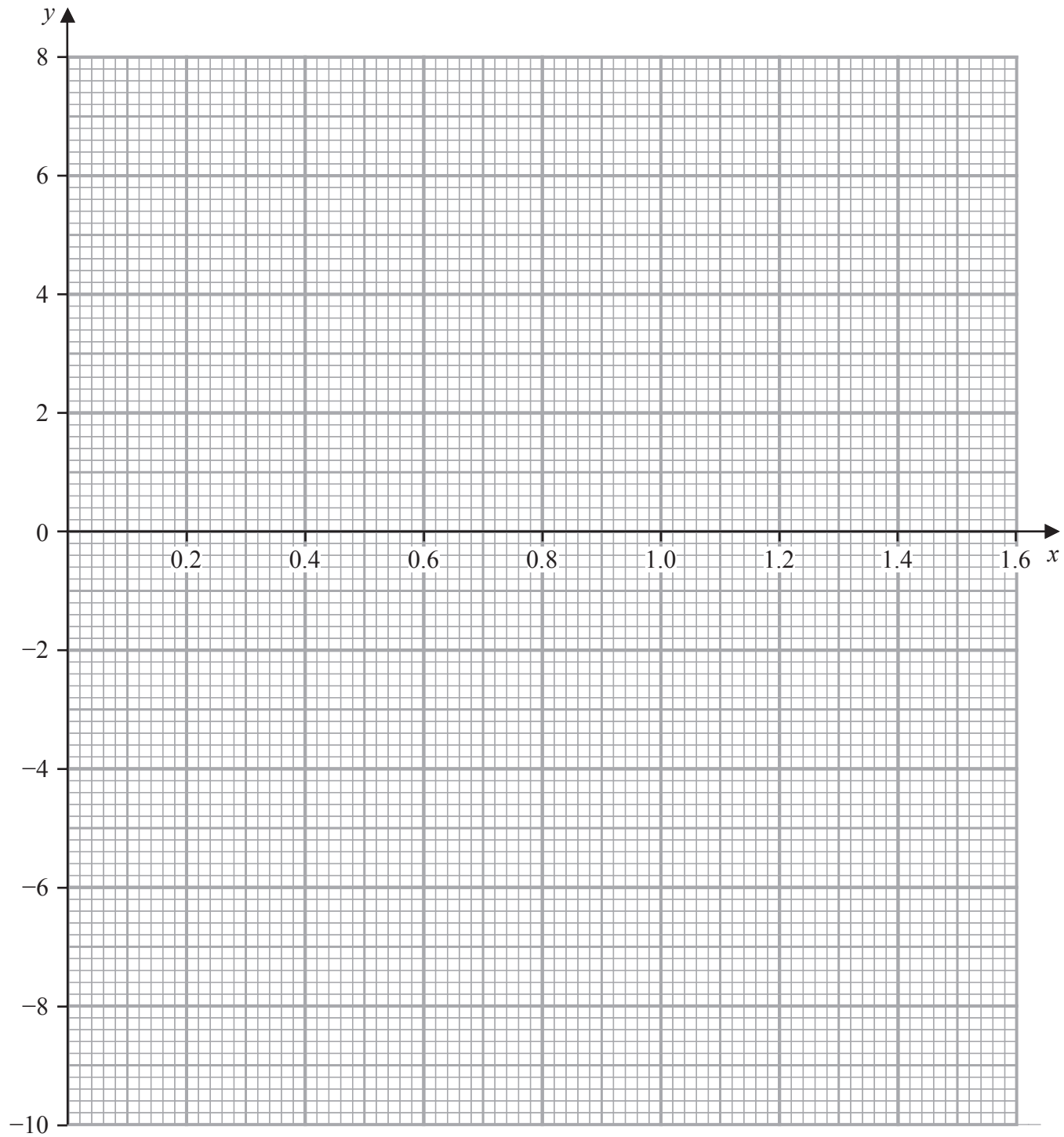
Question 12 continued



Turn over for a spare grid if you need to redraw your curve.

Question 12 continued

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(Total for Question 12 is 9 marks)

TOTAL FOR PAPER IS 100 MARKS

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