

Please check the examination details below before entering your candidate information

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

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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Q:1/1/1/1/



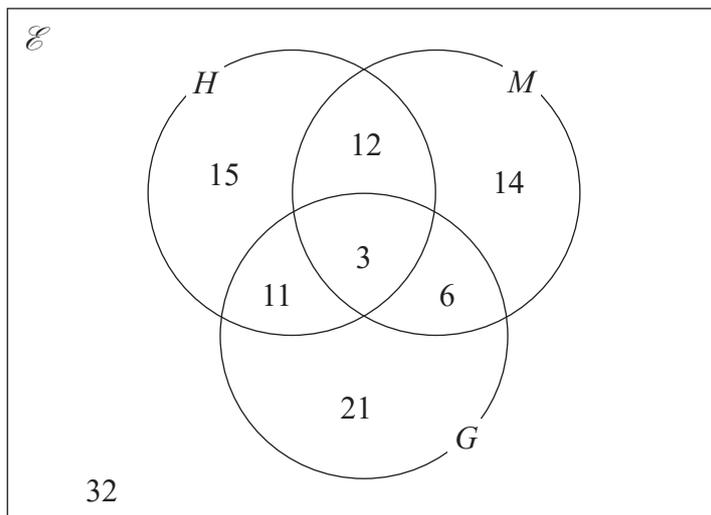

Pearson

Answer ALL ELEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The Venn diagram shows information about the numbers of students in a school who study History (H), Music (M) and Geography (G).



- (a) Find the number of students who study Geography. (1)
- (b) Find the number of students who study exactly two of the subjects History, Music and Geography. (1)
- (c) On the Venn diagram above, shade the region that represents the set $H \cap G'$ (1)

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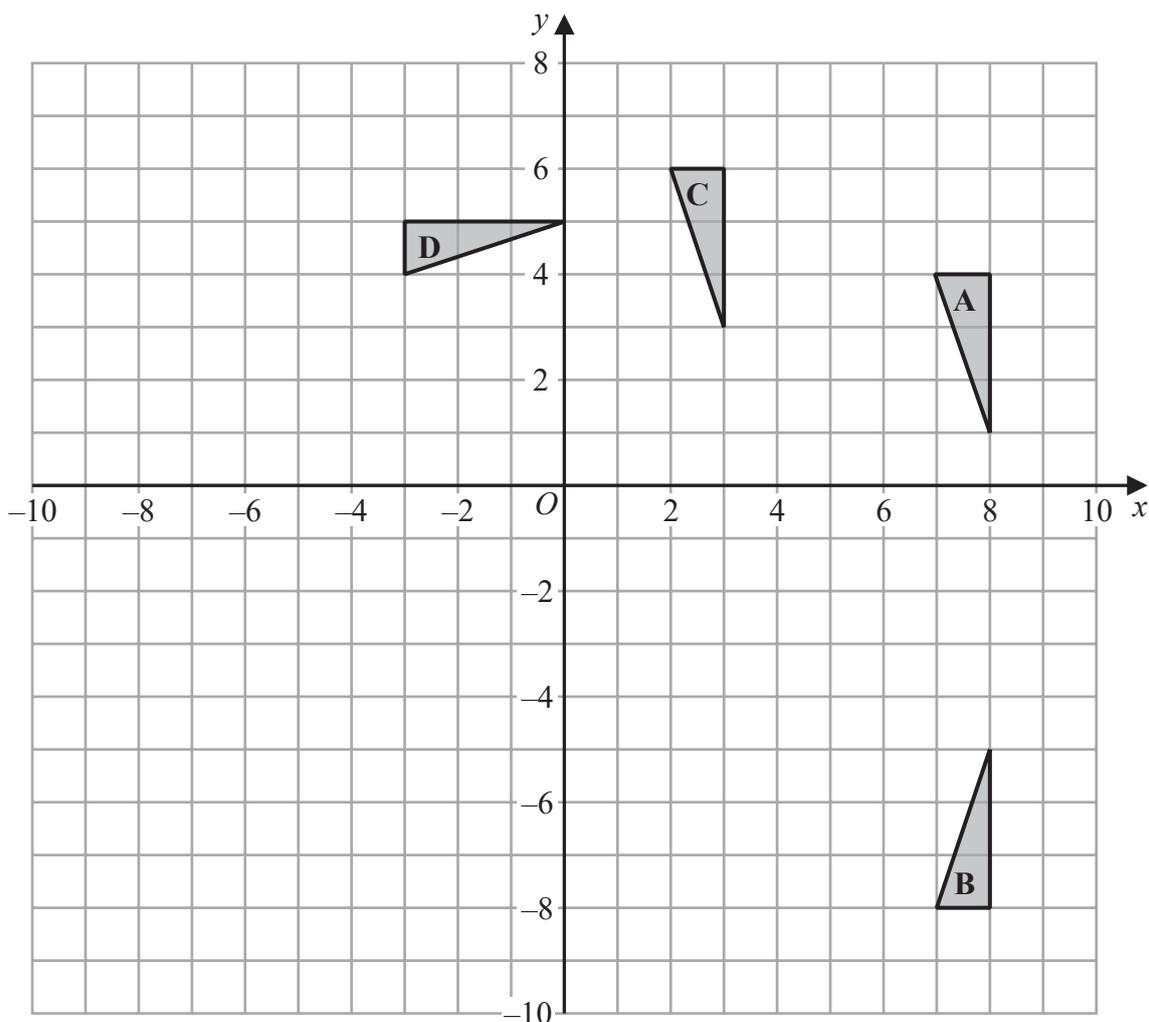
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Triangles *A*, *B*, *C* and *D* are drawn on the grid above.

Describe fully the single transformation that maps

- (a) triangle *A* onto triangle *B* (2)
- (b) triangle *A* onto triangle *C* (2)
- (c) triangle *A* onto triangle *D* (3)

Triangle *E* is the image of triangle *A* under an enlargement with scale factor -2 and centre of enlargement $(4, 0)$

- (d) On the grid, draw and label triangle *E* (2)

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Question 4 continued

Area with horizontal dotted lines for writing answers.

(Total for Question 4 is 9 marks)

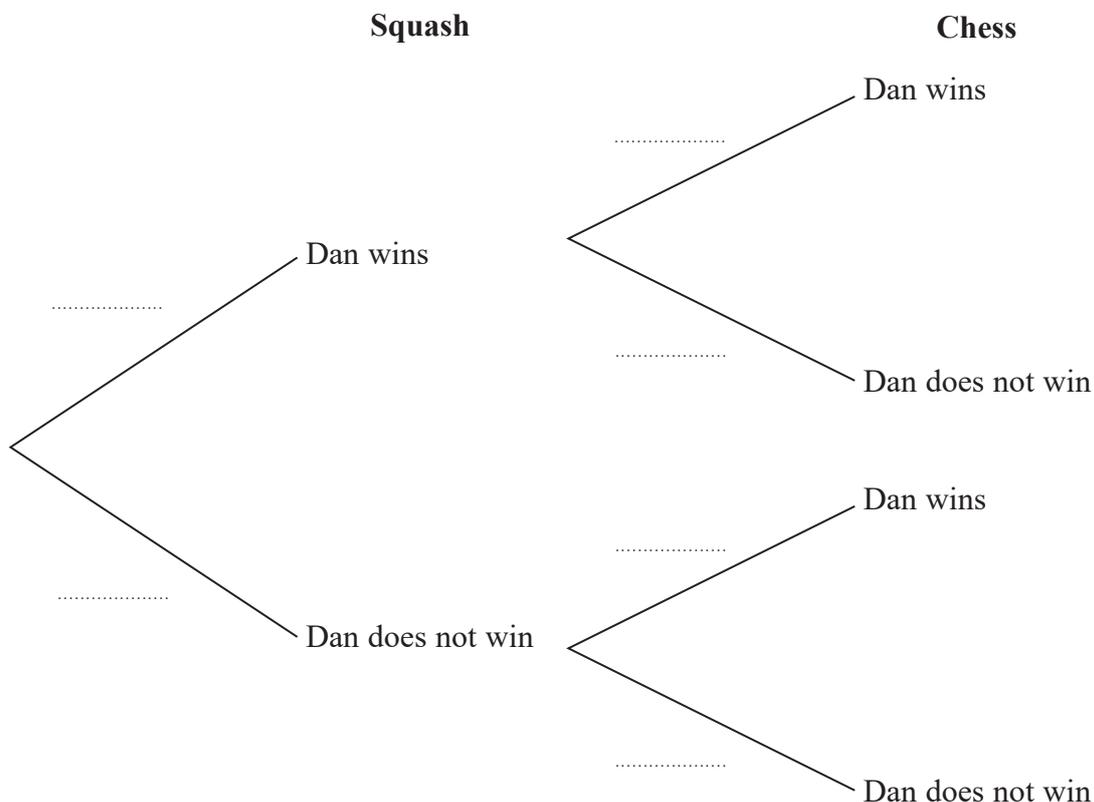


5 Dan is going to play one game of squash and one game of chess against his friend.

The probability that Dan will win the game of squash is $\frac{3}{5}$

The probability that Dan will win the game of chess is $\frac{1}{3}$

(a) Complete the probability tree diagram.



(2)

(b) Find the probability that Dan will win exactly one game.

(2)

Given that Dan won exactly one game,

(c) calculate the probability that he won his game of squash.

(2)

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Question 5 continued

Area with horizontal dotted lines for writing.

(Total for Question 5 is 6 marks)



6 In 2018, a badminton club had 460 members.

Of these members,

A were younger than 30

B were aged between 30 and 60 inclusive

C were older than 60

Given that $A : B : C = 2 : 5 : 3$

(a) find the total number of members who were aged 30 or older in 2018 (2)

In 2018, the annual membership fee for each member who was older than 60 was \$65
The annual membership fee for each other member was \$135

(b) Calculate the total amount, in \$, that the 460 members paid in annual membership fees in 2018 (2)

The annual membership fee for each member who was older than 60 in 2019 was 4% greater than the annual membership fee for each member who was older than 60 in 2018

(c) Calculate the annual membership fee for each member who was older than 60 in 2019 (2)

The badminton club buys 12 shuttlecocks for a total cost of \$5.10
The club then sells the shuttlecocks to members for \$0.50 each.

(d) Calculate the percentage profit, to 3 significant figures, made by the club on each shuttlecock that was sold. (2)

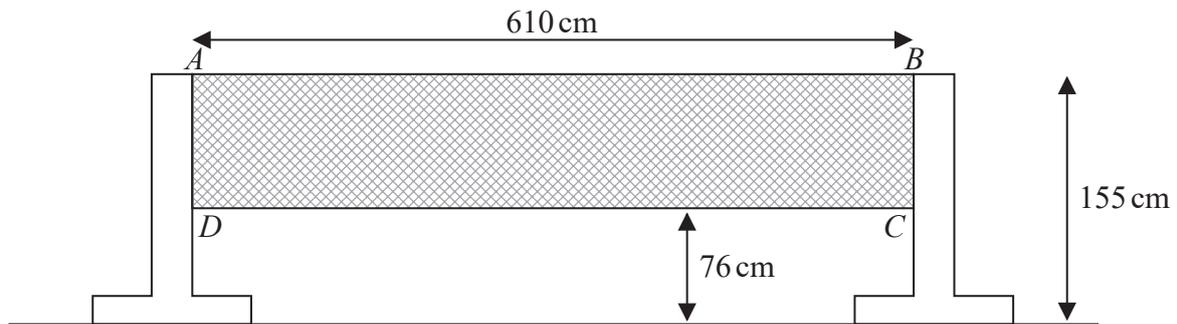


Figure 2

Figure 2 shows a badminton net $ABCD$ and two supports for the net.
The badminton net is shaded in the diagram.

Figure 2 gives information about the dimensions of the badminton net.
Each measurement is given to the nearest cm.

(e) Calculate the upper bound, in cm^2 , of the area of the net $ABCD$ (3)

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Question 6 continued

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Handwriting practice area with horizontal dotted lines.



Question 6 continued

Handwriting practice area consisting of 25 horizontal dotted lines for writing.

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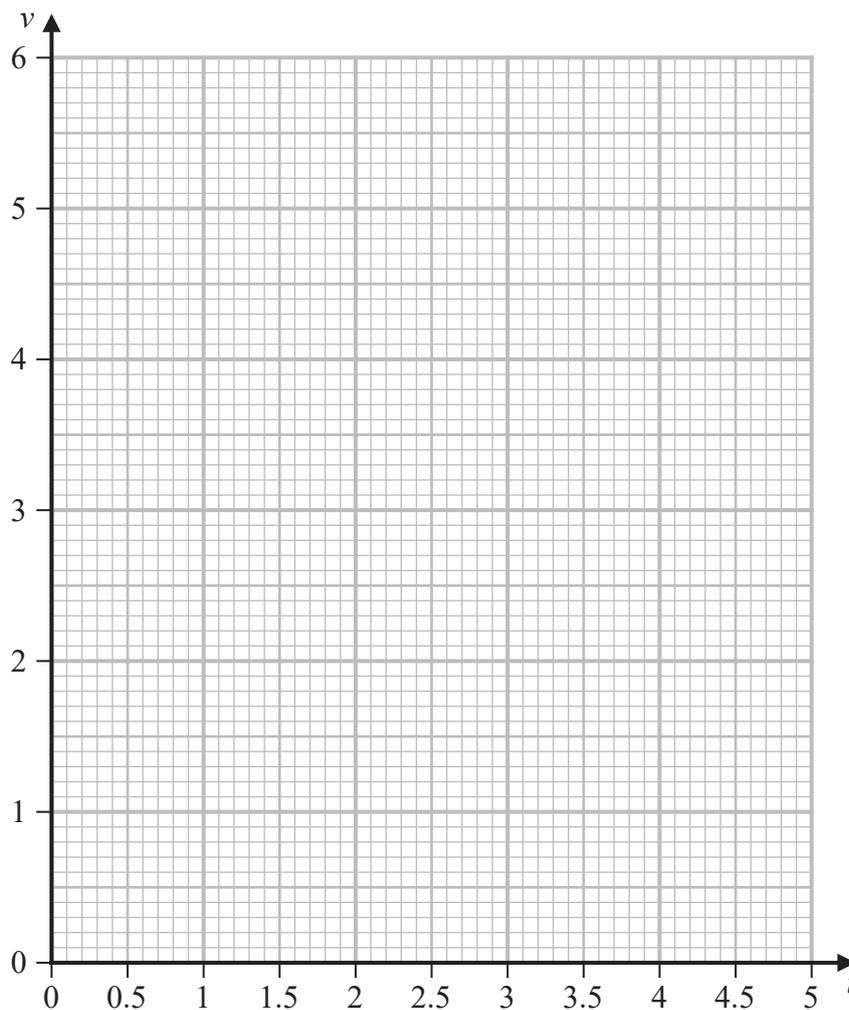
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(Total for Question 6 is 11 marks)



Question 7 continued



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Question 7 continued

Handwriting practice area consisting of 25 horizontal dotted lines for writing.

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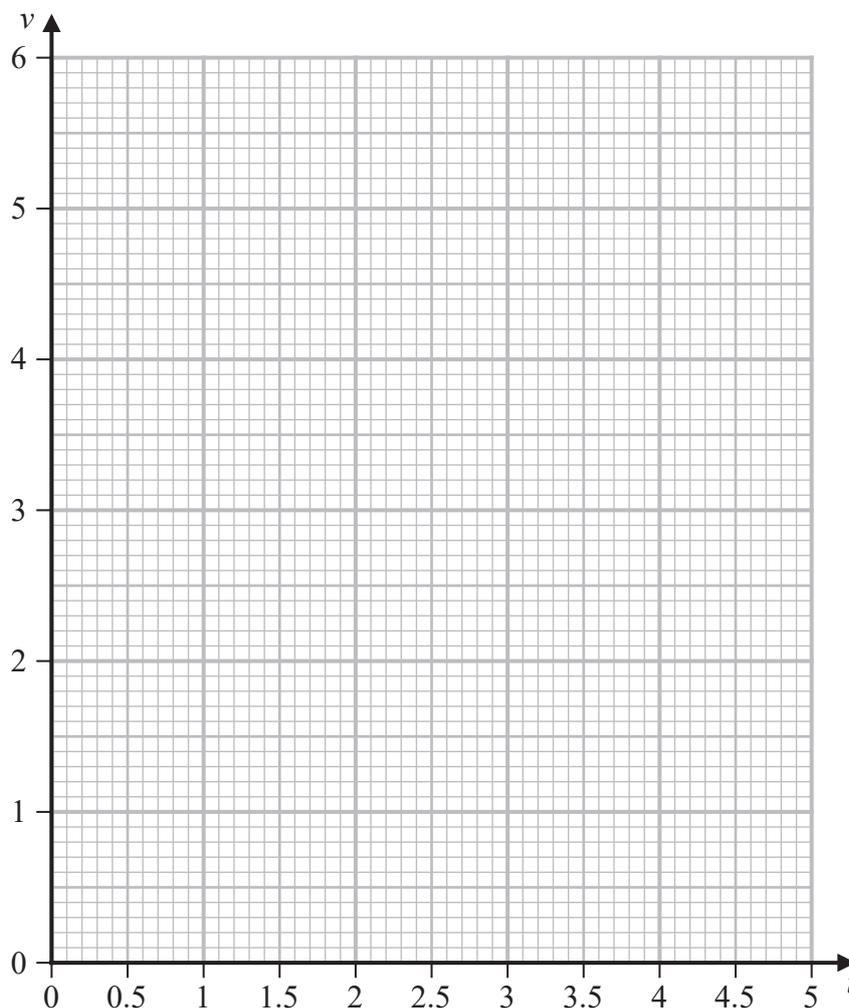
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Question 7 continued

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(Total for Question 7 is 11 marks)



Question 8 continued

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Question 8 continued

Handwriting practice area consisting of 25 horizontal dotted lines for student response.

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Question 8 continued

Area with horizontal dotted lines for writing answers.

(Total for Question 8 is 13 marks)



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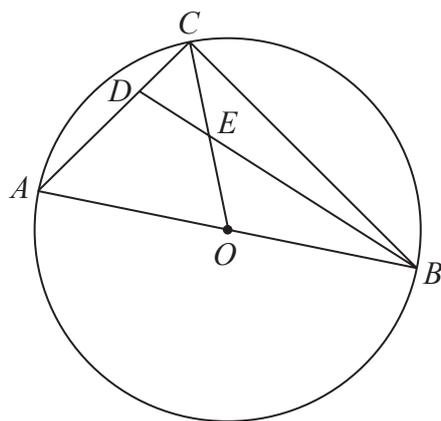


Diagram **NOT** accurately drawn

Figure 3

Figure 3 shows three points A , B and C on a circle with centre O where AOB is a diameter of the circle.

D is the point on AC such that $AD:DC = 3:2$

Given that $\vec{OA} = \mathbf{a}$ and $\vec{AD} = \mathbf{b}$

(a) find, in terms of \mathbf{a} or \mathbf{b} or \mathbf{a} and \mathbf{b} where appropriate, a simplified expression for

- (i) \vec{AC} (ii) \vec{CO} (iii) \vec{DB} (4)

E is the point such that CEO and DEB are straight lines.

By considering both $\vec{AD} + \vec{DE}$ and $\vec{AC} + \vec{CE}$

(b) find a simplified expression for \vec{AE} in terms of \mathbf{a} and \mathbf{b} (5)

Given that $|\mathbf{a}| = 7 \text{ cm}$ and $|\mathbf{b}| = 6 \text{ cm}$,

(c) calculate the exact area, in cm^2 , of $\triangle ABC$ (4)

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Question 9 continued

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Question 9 continued

Handwriting practice area consisting of 25 horizontal dotted lines for writing.

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Question 9 continued

Area with horizontal dotted lines for writing.

(Total for Question 9 is 13 marks)



Question 10 continued

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Area with horizontal dotted lines for writing.



Question 10 continued

Handwriting practice area consisting of 20 horizontal dotted lines for writing.

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Question 10 continued

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Area with horizontal dotted lines for writing.

(Total for Question 10 is 12 marks)



Question 11 continued

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Handwriting practice area with horizontal dotted lines.



