

Write your name here

Surname	Other names
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Edexcel Centre Number

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 Candidate Number

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International GCSE

Further Pure Mathematics

Paper 2

Tuesday 22 January 2013 – Afternoon Time: 2 hours	Paper Reference 4PM0/02
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Calculators may be used.	Total Marks
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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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
– *there may be more space than you need.*

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.

Turn over ►

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Answer all TEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1

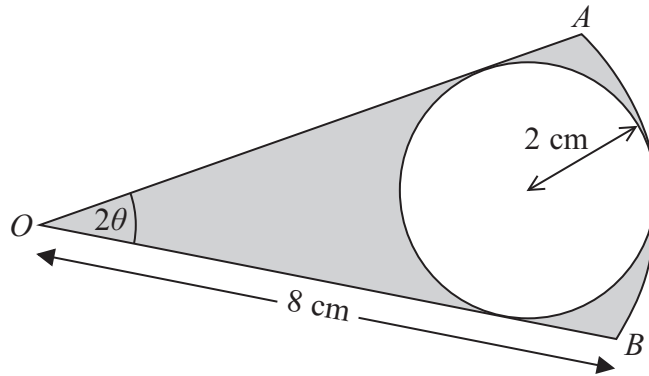


Diagram NOT accurately drawn

Figure 1

Figure 1 shows the sector, AOB of a circle with centre O and radius 8 cm. A circle of radius 2 cm touches the lines OA and OB and the arc AB . Angle AOB is 2θ radians, $0 < \theta < \frac{\pi}{4}$.

- (a) Find, to 4 significant figures, the value of θ (3)
- (b) Find, to 3 significant figures, the area of the region shaded in Figure 1. (3)

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Question 1 continued

Dotted lines for writing answers.

(Total for Question 1 is 6 marks)



Question 2 continued

A large rectangular area containing numerous horizontal dotted lines for writing answers.

(Total for Question 2 is 7 marks)



Question 3 continued

Dotted lines for writing.

(Total for Question 3 is 9 marks)



Question 5 continued

A large rectangular area containing 25 horizontal dotted lines for writing answers.

Question 6 continued

Dotted lines for writing.



Question 6 continued

A series of horizontal dotted lines for writing the answer to Question 6.

Question 7 continued

A series of horizontal dotted lines for writing the answer to Question 7.



8

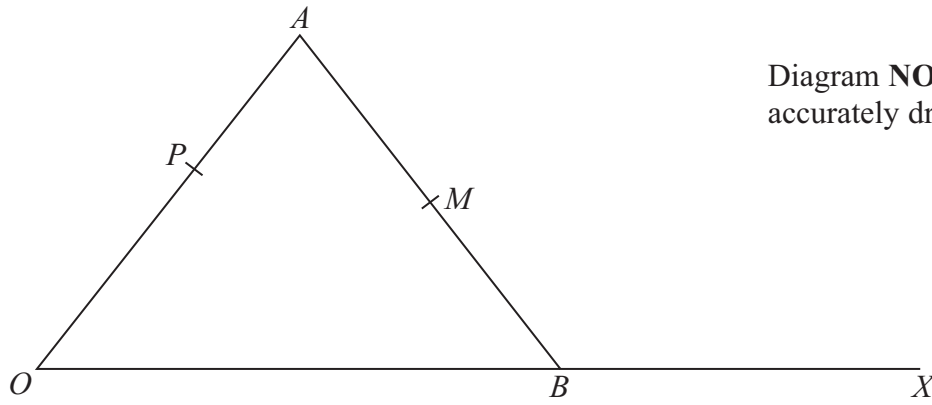
Diagram **NOT**
accurately drawn

Figure 3

In Figure 3, $\vec{OA} = \mathbf{a}$, $\vec{OB} = \mathbf{b}$ and M is the mid-point of AB .

The point P is on OA such that $OP:PA = 3:2$

The point X lies on OB produced.

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

(i) \vec{AB} (ii) \vec{OM} (iii) \vec{PM}

(6)

Given that P , M and X are collinear

(b) find, in terms of \mathbf{b} , \vec{OX}

(4)

(c) Find the ratio (area $\triangle OAM$):(area $\triangle OAX$).

(3)



Question 8 continued

A series of horizontal dotted lines for writing the answer to Question 8.



Question 9 continued

A series of horizontal dotted lines for writing the answer to Question 9.

Question 9 continued

Dotted lines for writing.

(Total for Question 9 is 16 marks)



