AS/A Level Mathematics

Radians

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

• Use **black** ink or ball-point pen.
• If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
• **Fill in the boxes** at the top of this page with your name.
• Answer **all** questions and ensure that your answers to parts of questions are clearly labelled..
• Answer the questions in the spaces provided
– there may be more space than you need.
• You should show sufficient working to make your methods clear.
Answers without working may not gain full credit.
• Answers should be given to three significant figures unless otherwise stated.

Information

• 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.
• Try to answer every question.
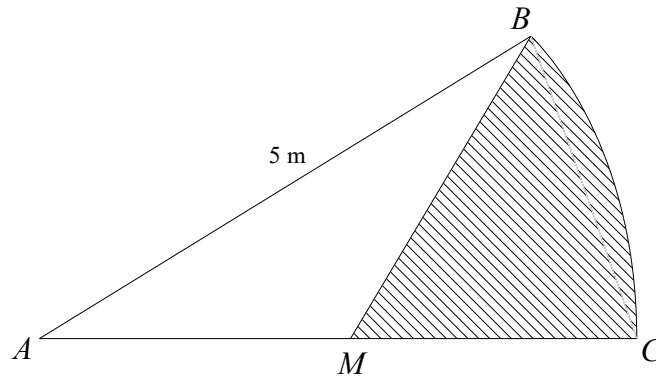• Check your answers if you have time at the end.

1 Sector AOB is a sector of a circle, radius 6cm. The chord AB is 8cm long.
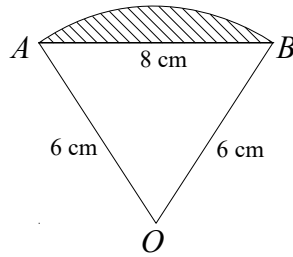
(a) Find the angle AOB in radians, giving your answer to 3 decimal places **(3)**
(b) Calculate the area of the sector AOB **(2)**
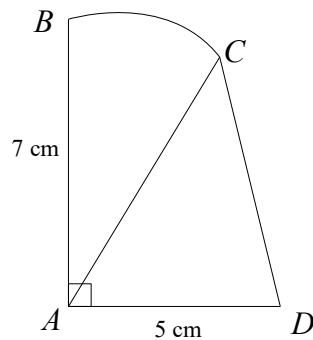(c) Calculate the shaded area. **(3)**

(Total for question 1 is 8 marks)

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2 Sector ABC is a sector of a circle, centre A and and radius 5m. Angle $BAC = 0.5$ radians

(a) Find the length of the arc BC **(2)**
(b) Calculate the area of the sector ABC **(2)**
Given that M is the midpoint of AC
(c) Find the perimeter of the shaded region **(4)**
(d) Find the area of the shaded region **(4)**

(Total for question 2 is 12 marks)

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3 Sector ABC is a sector of a circle, centre A and and radius 7 cm. Angle $BAC = 0.6$ radians

(a) Find the length of the arc BC **(2)**
(b) Calculate the area of the sector ABC **(2)**
(c) Find the size of angle CAD, in radians **(1)**
(d) Find the total area of the shape $ABCD$ **(3)**

(Total for question 3 is 8 marks)