HIGHER

8.8 Proof of the Circle Theorems: 10-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a circle with centre O, angle AOB = 136 degrees. Point C lies on the circumference on the major arc AB. Work out angle ACB.

(Total for Question 1 is 2 marks)

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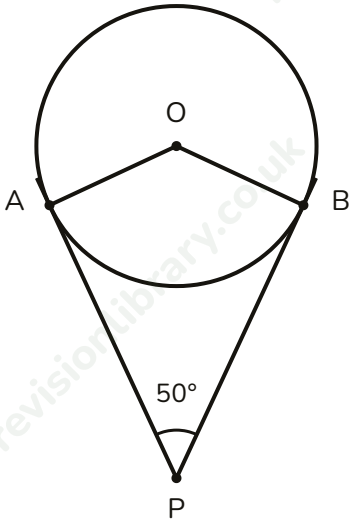
2 Give a short proof that the angle at the centre is twice the angle at the circumference standing on the same arc. Use radii in your explanation.

(Total for Question 2 is 3 marks)

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3 PA and PB are tangents drawn from an external point P to a circle with centre O, touching the circle at A and B. Angle APB = 50 degrees.

Diagram NOT accurately drawn



(a) State the size of angle OAP, giving a reason for your answer. **(2)**

(b) Calculate the size of angle AOB. **(2)**

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(Total for Question 3 is 4 marks)

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Mark scheme · 8.8 Proof of the Circle Theorems: 10-minute Pack

Question 1

use angle at centre = 2 x angle at circumference (or divide 136 by 2) oe **M1**

68 degrees cao **A1**

Answer: 68 degrees

Question 2

state OA = OC and OB = OC (radii), so triangles OAC and OBC are isosceles oe **M1**

deduce angle OCA = angle OAC and angle OBC = angle OCB from the isosceles triangles oe **M1**

angle AOB = 2 x angle ACB cso **A1**

Answer: Proof: OA = OC and OB = OC so triangles OAC and OBC are isosceles. Thus OCA = OAC and OBC = OCB. Adding these equal angles shows angle AOB = 2 x angle ACB. (cso)

Question 3

(a) angle OAP = 90 degrees **B1**

(a) reason: the tangent is perpendicular to the radius at the point of contact **B1**

(a) Answer: 90 degrees

(b) 360 - 90 - 90 - 50 oe **M1**

(b) 130 degrees cao **A1**

(b) Answer: 130 degrees

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