

Geometric Proof

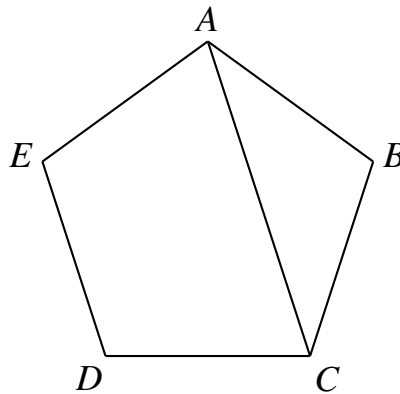
For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **26**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** $ABCDE$ is a regular pentagon.

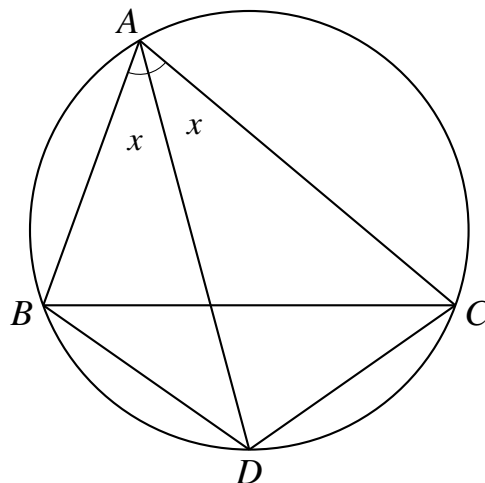


Not drawn accurately

Prove that AC is parallel to ED .
Give a reason for each stage of your working.

[3 marks]

2 A, B, C and D are points on a circle.



Not drawn accurately

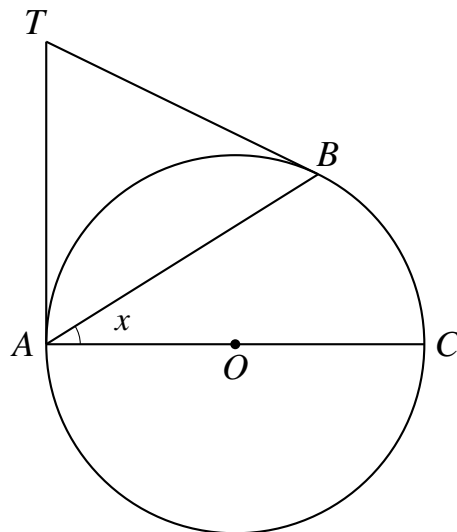
Angle $BAD = \text{angle } CAD$

Prove that triangle BCD is isosceles.

Give a reason for each stage of your working.

[3 marks]

- 3 A, B and C are points on a circle, centre O .



Not drawn accurately

AC is a diameter.

TA and TB are tangents to the circle.

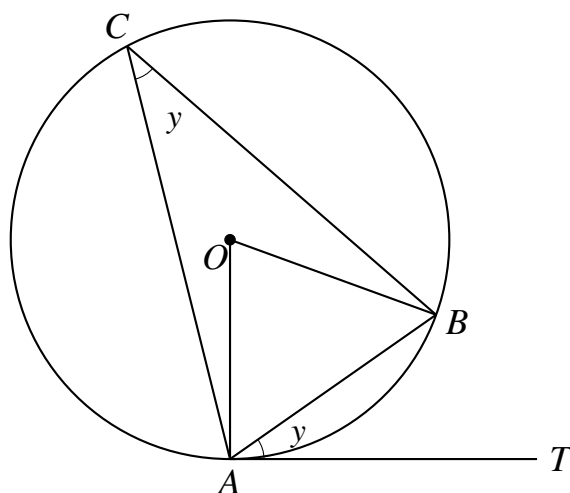
Angle $BAC = x$

Prove that angle $ATB = 2x$

Give a reason for each stage of your working.

[4 marks]

- 4 A, B and C are points on a circle, centre O .



Not drawn accurately

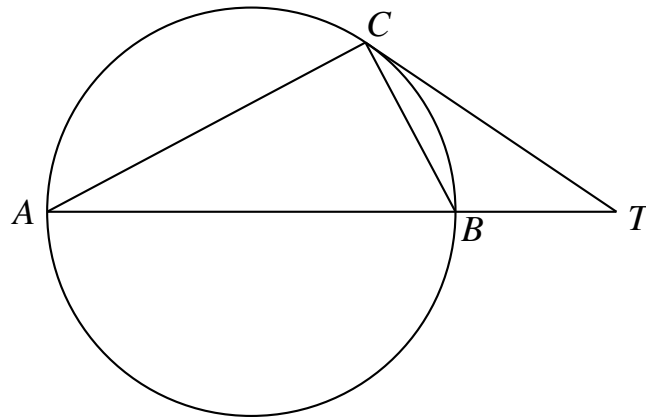
T is a point such that angle $TAB = \text{angle } ACB = y$

Prove that TA is a tangent to the circle.

Give a reason for each stage of your working.

[3 marks]

- 5 A, B and C are points on a circle.



Not drawn accurately

The tangent to the circle at C meets the line AB extended at T .

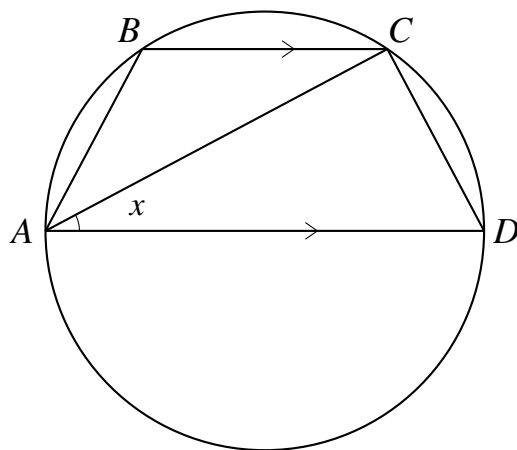
Angle $BCT = y$ Angle $ATC = 90^\circ - 2y$

Prove that AB is a diameter of the circle.

Give a reason for each stage of your working.

[4 marks]

- 6 A, B, C and D are points on a circle.



Not drawn accurately

AD is a diameter of the circle.

BC is parallel to AD .

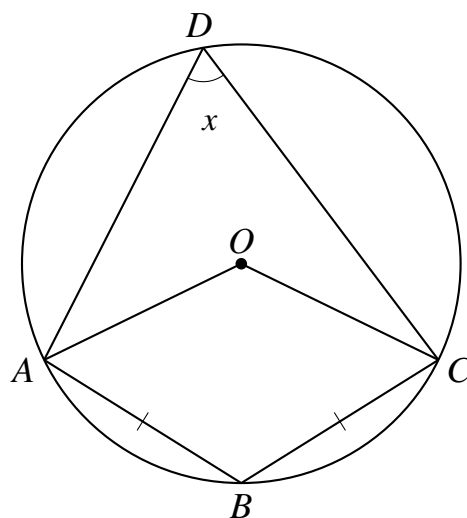
Angle $CAD = x$

Prove that angle $BAC = 90^\circ - 2x$

Give a reason for each stage of your working.

[4 marks]

7 A, B, C and D are points on a circle, centre O .



Not drawn accurately

$$AB = BC \quad \text{Angle } ADC = x$$

Prove that angle $OAB = 90^\circ - \frac{x}{2}$

Give a reason for each stage of your working.

[5 marks]

[illegible]