

Circle Theorems

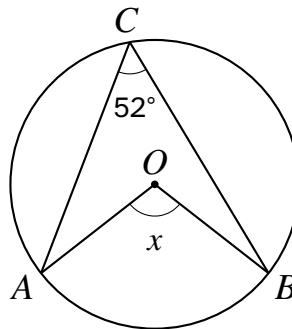
For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **29**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. Diagrams are not drawn accurately. Give reasons for your answers.

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

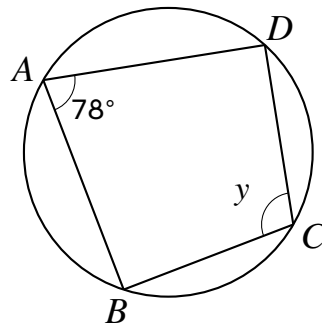


Not drawn accurately

Work out the size of angle x .
Give a reason for your answer.

[2 marks]

- 2 $ABCD$ is a cyclic quadrilateral.

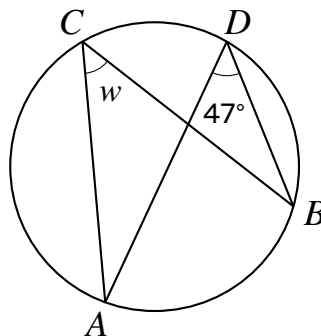


Not drawn accurately

Work out the size of angle y .
Give a reason for your answer.

[2 marks]

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

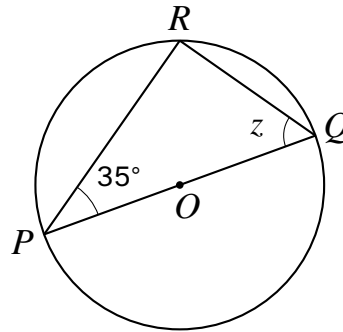


Not drawn accurately

Work out the size of angle w .
Give a reason for your answer.

[2 marks]

- 4 P, Q and R are points on a circle, centre O .

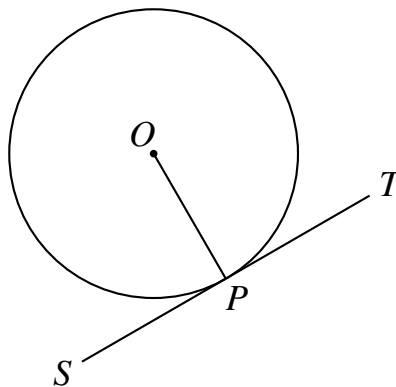


Not drawn accurately

PQ is a diameter of the circle.
Work out the size of angle z .
Give reasons for your answer.

[3 marks]

- 5 ST is a tangent to the circle, centre O , at the point P .



Not drawn accurately

What is the size of angle OPT ?
Circle your answer.

[1 mark]

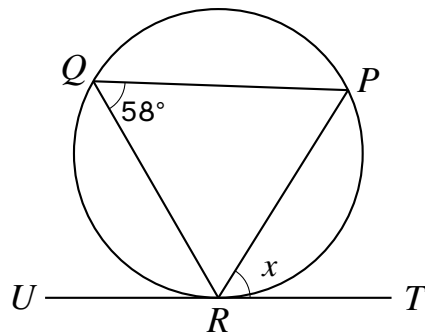
45°

60°

90°

180°

- 6 P, Q and R are points on a circle.



Not drawn accurately

UT is the tangent to the circle at R .

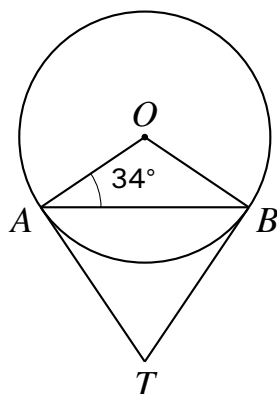
Angle $PQR = 58^\circ$

Work out the size of angle x .

Give a reason for your answer.

[2 marks]

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



Not drawn accurately

TA and TB are tangents to the circle.

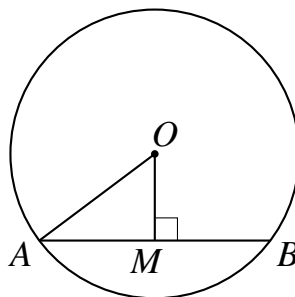
Angle $OAB = 34^\circ$

Work out the size of angle ATB .

Give reasons for your answer.

[3 marks]

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



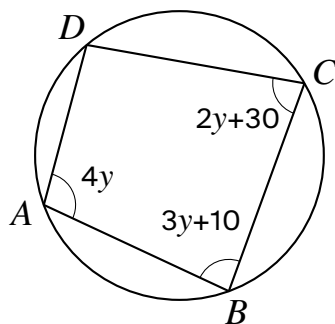
Not drawn accurately

OM is perpendicular to the chord AB .
The radius of the circle is 10 cm. $AB = 16$ cm
Work out the length of OM .

[3 marks]

Answer _____ cm

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



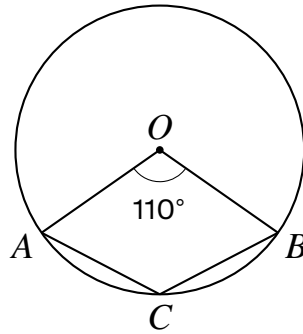
Not drawn accurately

$ABCD$ is a cyclic quadrilateral.
Angle $BAD = 4y$, angle $ABC = 3y + 10$ and angle $BCD = 2y + 30$
Work out the size of angle ADC .

[3 marks]

Answer _____ degrees

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



Not drawn accurately

Imani is trying to work out the size of angle ACB .

Here is her working.

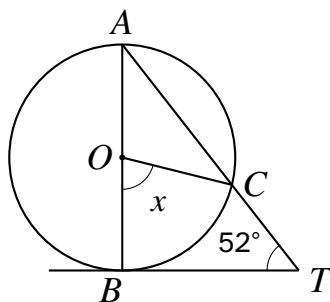
$$\text{Angle } ACB = 110 \div 2 = 55^\circ$$

The angle at the centre is twice the angle at the circumference.

Make one criticism of Imani's working.

[1 mark]

- 11 A , B and C lie on a circle with centre O .



Not drawn accurately

The line AB is a diameter.

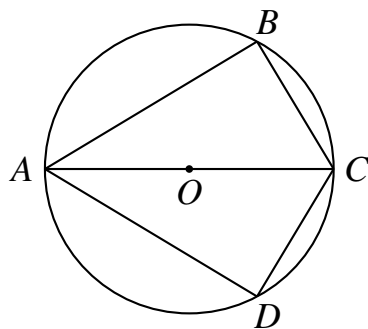
The tangent at B meets the line AC , extended beyond C , at the point T .

Work out the size of angle x .

[3 marks]

$x =$ _____ $^\circ$

- 12 A, B, C and D lie on a circle with centre O .



Not drawn accurately

The line AC passes through O .

Angle $BAC = \text{angle } DAC$

Prove that $AB = AD$.

[4 marks]
