

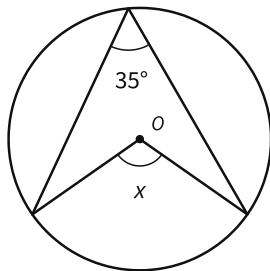
Circle Theorems

ANSWERS

Calculator | 30 minutes | Total marks: 24

Name Class

- 1 O is the centre of the circle.



Not drawn accurately

Work out the size of angle x .

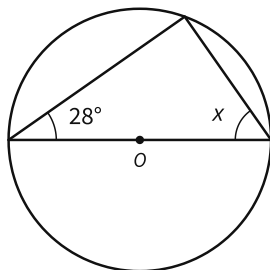
Give a reason for your answer.

$$x = 70 \text{ (1)}$$

The angle at the centre is twice the angle at the circumference (1)

[2 marks]

- 2 The line through O is a diameter of the circle.



Not drawn accurately

Work out the size of angle x .

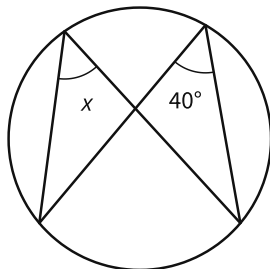
Give a reason for your answer.

$$x = 62 \text{ (1)}$$

The angle in a semicircle is 90° (1)

[2 marks]

- 3



Not drawn accurately

Write down the size of angle x .

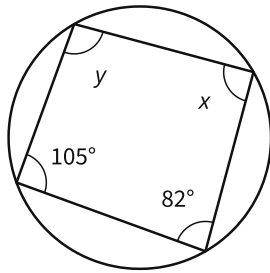
Give a reason for your answer.

$$x = 40 \text{ (1)}$$

Angles in the same segment are equal (1)

[2 marks]

- 4 The diagram shows a cyclic quadrilateral.



Not drawn accurately

$$x = 75 \text{ (1)}^\circ$$

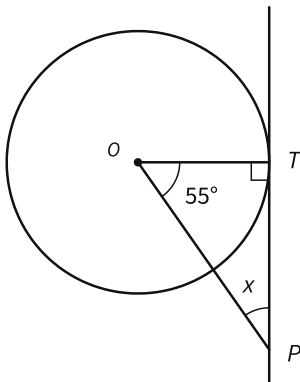
$$y = 98 \text{ (1)}^\circ$$

Give a reason for your answers.

Opposite angles of a cyclic quadrilateral add up to 180° (1)

[3 marks]

- 5 PT is a tangent to the circle at T . O is the centre of the circle.



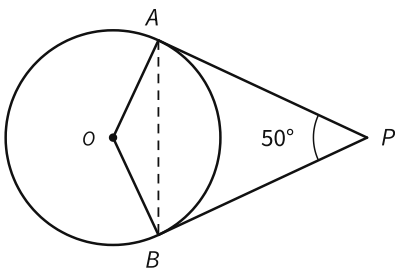
Not drawn accurately

Work out the size of angle x .

angle $OTP = 90^\circ$, tangent meets radius at 90° (1)

$$x = 35 \text{ (1)}^\circ \text{ [2 marks]}$$

- 6 PA and PB are tangents to the circle. O is the centre of the circle.



Not drawn accurately

- (a) Work out the size of angle PAB .

$PA = PB$, so the triangle is isosceles (1)

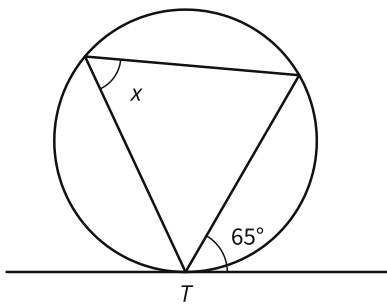
$$\text{Answer } 65 \text{ (1)}^\circ \text{ [2 marks]}$$

- (b) Work out the size of angle AOB .

angles OAP and OBP are 90° (1)

$$\text{Answer } 130 \text{ (1)}^\circ \text{ [2 marks]}$$

- 7 The straight line is a tangent to the circle at T.



Not drawn accurately

Write down the size of angle x.

Give a reason for your answer.

$x = 65$ (1)

Alternate segment theorem (1)

[2 marks]

- 8 A circle has a radius of 13 cm. A chord of the circle is 24 cm long.

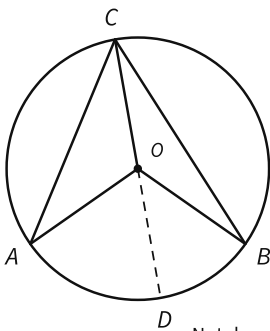
Work out the distance from the centre of the circle to the chord.

The perpendicular from the centre bisects the chord, so half is 12 (1)

$13^2 - 12^2 = 25$ (1)

Answer 5 (1) cm [3 marks]

- 9 A, B and C are points on a circle, centre O. COD is a straight line.



Not drawn accurately

Prove that angle AOB is twice angle ACB.

OA = OC, radii, so triangle OAC is isosceles and angle OAC = angle OCA = a (1)

angle AOD = 2a, exterior angle of the triangle (1)

In the same way angle BOD = 2b, where b = angle OCB (1)

angle AOB = 2a + 2b = 2(a + b) = 2 × angle ACB (1)

[4 marks]

Question	Topic	RAG
1	I can use the angle at the centre theorem	
2	I can use the angle in a semicircle	
3	I can use angles in the same segment	
4	I can use a cyclic quadrilateral	
5	I know a tangent meets a radius at 90°	
6	I can use two tangents from a point	
7	I can use the alternate segment theorem	
8	I can use a chord and its perpendicular from the centre	
9	I can prove a circle theorem	