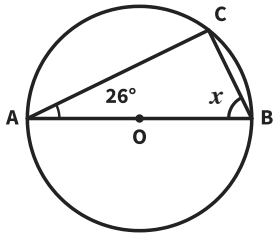
Circle Theorems: Angle in a Semicircle

ANSWERS

1 angle in a semicircle = 90°

AB is a diameter. Find x.



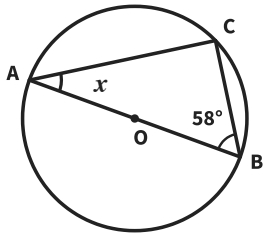
Angle ACB = 90 °
angle in a semicircle

$x = 180 -$ 90 $-$ 26

$x =$ 64 °

2

AB is a diameter. Find x.



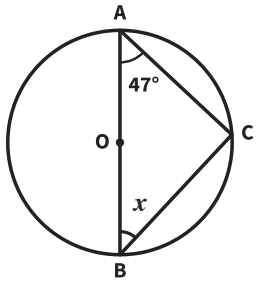
Angle ACB = 90 °
angle in a semicircle

$x = 180 -$ 90 $-$ 58

$x =$ 32 °

3

AB is a diameter. Find x.
Give your reasons.



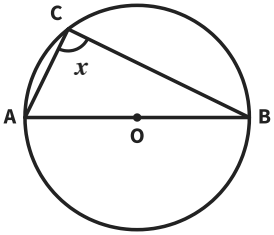
ACB = 90° (angle in a semicircle)

x = 180 − 90 − 47 (triangle)

$x =$ 43 °

4 Notice the change!

AB is a diameter. Find x. Give a reason.



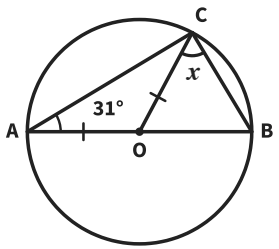
x = 90°

Reason: angle in a semicircle

$x =$ 90 °

5

O is the centre and AB is a diameter.
Find x.



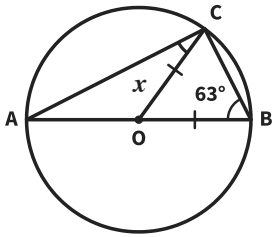
OA = OC, so angle OCA = 31 °

$x = 90 -$ 31

$x =$ 59 °

6

O is the centre and AB is a diameter.
Find x. Give your reasons.



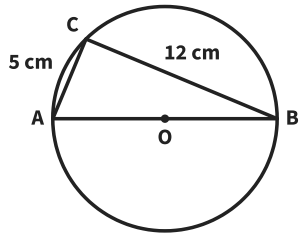
OCB = 63° (base angles, OB = OC)

x = 90 − 63 (angle in a semicircle)

$x =$ 27 °

7

AB is a diameter. Find the length of AB.



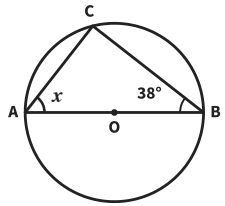
ACB = 90°, so $AB^2 = 5^2 + 12^2 = 169$

$AB = \sqrt{169}$

AB = 13 cm

8

AB is a diameter. Ava says $x = 90°$ because AB is a diameter. Explain why she is wrong, then find x.



the right angle is at C, not at A

x = 180 − 90 − 38

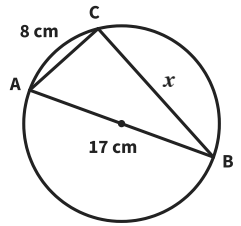
$x =$ 52 °

Circle Theorems: Angle in a Semicircle *further practice*

ANSWERS

9

AB is a diameter of length 17 cm. Find x.



ACB = 90° (angle in a semicircle)

$x^2 = 17^2 - 8^2 = 225$

x = 15 cm

10

A, B and C are points on a circle.
Angle ACB = 87°. Is AB a diameter of the circle? Explain how you know.

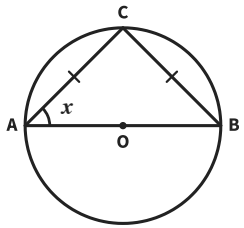
No.

If AB were a diameter, angle ACB would be 90° (angle in a semicircle).

Answer No

11

AB is a diameter and CA = CB. Find x.
Give your reasons.



ACB = 90° (angle in a semicircle)

x = (180 − 90) ÷ 2 (base angles equal)

x = 45°

12

A round pond has a straight path AB across it, through its centre. A post C is on the edge of the pond. AC = 20 m and BC = 21 m. Find the radius of the pond.

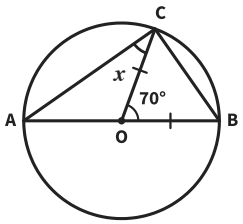
ACB = 90°, so $AB^2 = 20^2 + 21^2 = 841$

AB = 29 m, radius = 29 ÷ 2

Radius = 14.5 m

13

O is the centre and AB is a diameter.
Angle BOC = 70°. Find x.
Give your reasons.



OB = OC (radii), so

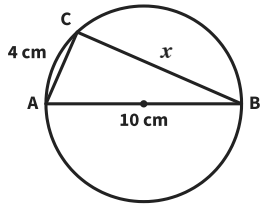
OCB = (180 − 70) ÷ 2 = 55°

x = 90 − 55 (angle in a semicircle)

x = 35°

14

AB is a diameter of length 10 cm.
Find x to 1 decimal place.



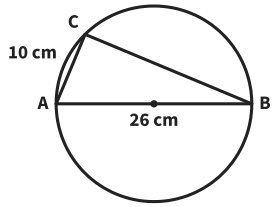
ACB = 90° (angle in a semicircle)

$x = \sqrt{(10^2 - 4^2)} = \sqrt{84}$

x = 9.2 cm

15

AB is a diameter of length 26 cm.
Find the area of triangle ABC.



ACB = 90° (angle in a semicircle)

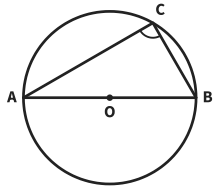
$BC = \sqrt{(26^2 - 10^2)} = 24$ cm

area = ½ × 10 × 24

Area = 120 cm²

16

AB is a diameter and O is the centre.
Use the angle at the centre to explain why angle ACB is always 90°.



AOB is a straight line, so it is 180°.

The angle at C is half the angle at the centre: 180 ÷ 2 = 90°.

So ACB = 90°