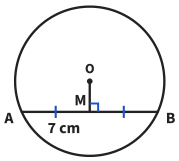
Circle Theorems: Chords

ANSWERS

1

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



AM = MB = 7 cm

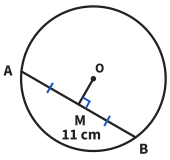
AB = 2 × 7

Reason The perpendicular from the centre to a chord bisects the chord.

AB = 14 cm

2

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



AM = MB = 11 cm

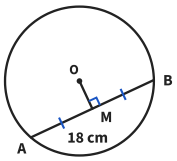
AB = 2 × 11

Reason The perpendicular from the centre to a chord bisects the chord.

AB = 22 cm

3

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find MB.



AM = MB = 9 cm

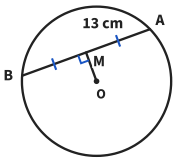
MB = 18 ÷ 2

Reason The perpendicular from the centre to a chord bisects the chord.

MB = 9 cm

4

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



AM = MB = 13 cm

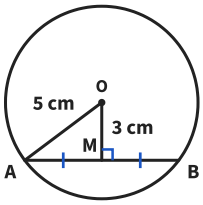
AB = 2 × 13

Reason The perpendicular from the centre to a chord bisects the chord.

AB = 26 cm

5

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



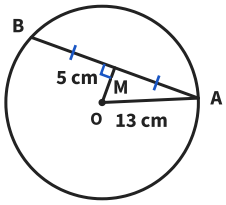
$AM^2 = 5^2 - 3^2$

AM = 4 cm

AB = 8 cm

6

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



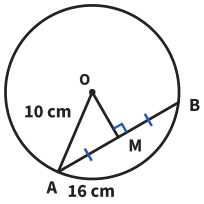
$AM^2 = 13^2 - 5^2$

AM = 12 cm

AB = 24 cm

7 Notice the change!

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find OM.



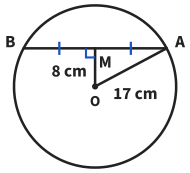
AM = 16 ÷ 2 = 8 cm

$OM^2 = 10^2 - 8^2$

OM = 6 cm

8

OM is perpendicular to AB.
Zara says AB = 15 cm. Explain her mistake and find AB.



15 cm is AM, half of the chord.

AB = 2 × 15

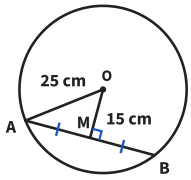
AB = 30 cm

Circle Theorems: Chords *further practice*

ANSWERS

9

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB.



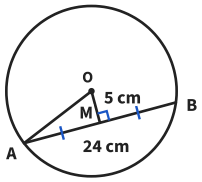
$AM^2 = 25^2 - 15^2 = 400$, AM = 20

AB = 2 × 20

AB = 40 cm

10

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find the radius OA.



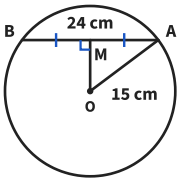
AM = 24 ÷ 2 = 12

$OA^2 = 12^2 + 5^2 = 169$

OA = 13 cm

11

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find OM.



AM = 12

$OM^2 = 15^2 - 12^2 = 81$

OM = 9 cm

12

A straight path crosses a round lawn of radius 17 m. At its nearest, the path passes 8 m from the centre of the lawn. How long is the path across the lawn?

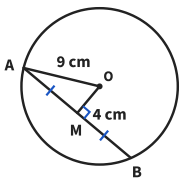
half = $\sqrt{(17^2 - 8^2)} = 15$

2 × 15

Answer 30 m

13

O is the centre of the circle.
OM is perpendicular to the chord AB.
Find AB to 1 decimal place.



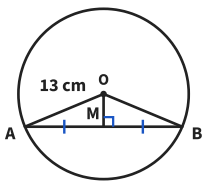
AM = $\sqrt{(9^2 - 4^2)} = \sqrt{65} = 8.062...$

AB = 2 × 8.062...

AB = 16.1 cm

14

O is the centre and OM is perpendicular to AB. OA = 13 cm and OM = 5 cm.
Find the perimeter of triangle OAB.



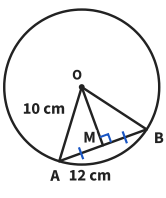
AM = $\sqrt{(13^2 - 5^2)} = 12$, AB = 24

OB = OA = 13: 13 + 13 + 24

Answer 50 cm

15

O is the centre and OM is perpendicular to AB. Find the area of triangle OAB.



OM = $\sqrt{(10^2 - 6^2)} = 8$

½ × 12 × 8

Answer 48 cm^2

16

O is the centre of a circle and AB is a chord. Explain why triangle OAB is isosceles.

OA and OB are both radii

so two sides are equal

So OA = OB