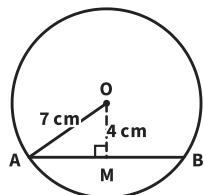


Circle Theorems: Chords *stretch*

ANSWERS 

1

O is the centre. The radius is 7 cm and the chord AB is 4 cm from O. Find the length of AB to 1 decimal place.



Not drawn accurately

$$AM = \sqrt{7^2 - 4^2} = \sqrt{33} = 5.74... \text{ cm}$$

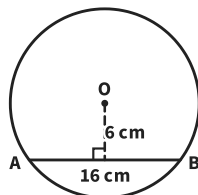
$$AB = 2 \times 5.74...$$

$$AB = 11.5 \text{ cm}$$

Answer

2

The chord AB is 16 cm long and 6 cm from the centre O. Find the area of the circle to 3 significant figures.



Not drawn accurately

$$\text{radius} = \sqrt{8^2 + 6^2} = 10 \text{ cm}$$

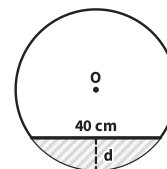
$$\text{area} = \pi \times 10^2 = 314.15...$$

$$314 \text{ cm}^2$$

Answer

3

A pipe has a circular cross section of radius 25 cm. The water surface is 40 cm wide. Find the depth d of the water.



Not drawn accurately

$$\text{centre to surface: } \sqrt{25^2 - 20^2} = 15 \text{ cm}$$

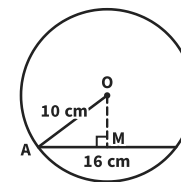
$$d = 25 - 15$$

$$d = 10 \text{ cm}$$

Answer

4

The radius is 10 cm and AB = 16 cm. Jo writes $OM = \sqrt{16^2 - 10^2} = 12.5$ cm. Explain her mistakes and find OM.



Not drawn accurately

use half the chord, $AM = 8$ cm; the radius OA is the hypotenuse

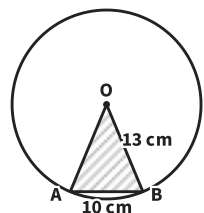
$$OM = \sqrt{10^2 - 8^2} = \sqrt{36} = 6$$

$$OM = 6 \text{ cm}$$

Answer

5

O is the centre, the radius is 13 cm and the chord AB is 10 cm. Find the area of triangle OAB.



Not drawn accurately

$$\text{height from O: } \sqrt{13^2 - 5^2} = 12 \text{ cm}$$

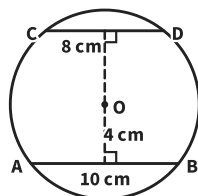
$$\text{area} = \frac{1}{2} \times 10 \times 12$$

$$60 \text{ cm}^2$$

Answer

6

AB = 10 cm and is 4 cm from the centre O. CD = 8 cm in the same circle. How far is CD from O?



Not drawn accurately

$$r^2 = 5^2 + 4^2 = 41$$

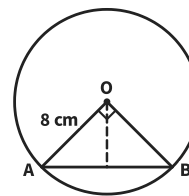
$$\text{distance} = \sqrt{41 - 4^2} = \sqrt{25} = 5$$

$$5 \text{ cm}$$

Answer

7

Angle AOB = 90° and the radius is 8 cm. Find the length of AB and its distance from O, both to 1 decimal place.



Not drawn accurately

$$AB = \sqrt{8^2 + 8^2} = 11.31... \text{ cm}$$

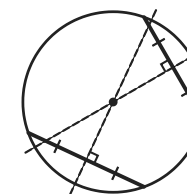
$$OM = AM = \frac{1}{2} AB = 5.65... \text{ (angle OAM} = 45^\circ \text{)}$$

$$AB = 11.3 \text{ cm}, 5.7 \text{ cm}$$

Answer

8

Explain how to find the centre of a round plate by drawing two chords on it.



the perpendicular bisector of any chord passes through the centre

draw two chords and their bisectors: they cross at the centre

where the bisectors cross

Reason