

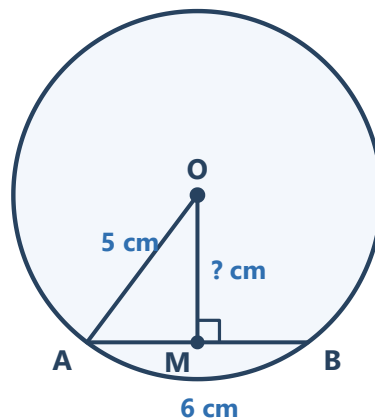
GCSE Maths: Chords (Higher): answers

GCSE Maths - Circle Theorems - Higher - Lesson 26.8

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch26-circle-theorems/higher/chords/

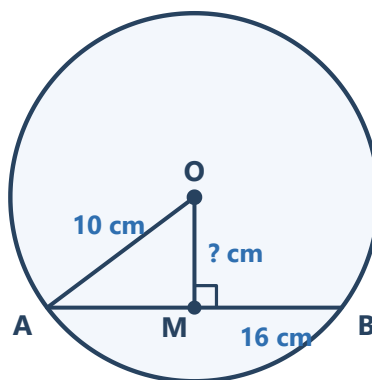
Exercise 26H Chords (no calculator) Non-calculator

- 1 AB is a chord of a circle with centre O and radius 5 cm. $AB = 6$ cm. M is the point where the perpendicular from O meets the chord. Work out the distance OM .



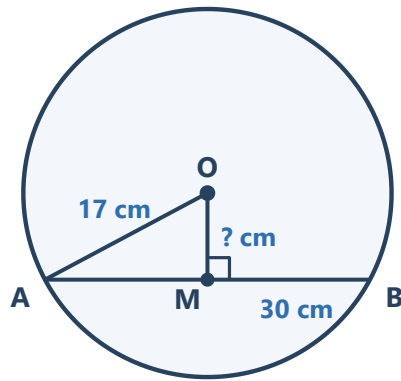
Answer: 4 cm

- 2 AB is a chord of a circle with centre O and radius 10 cm. $AB = 16$ cm. M is the point where the perpendicular from O meets the chord. Work out the distance OM .



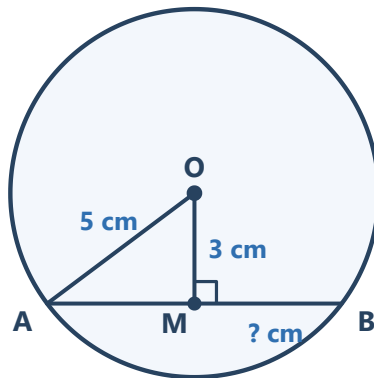
Answer: 6 cm

- 3 AB is a chord of a circle with centre O and radius 17 cm. $AB = 30$ cm. M is the point where the perpendicular from O meets the chord. Work out the distance OM .



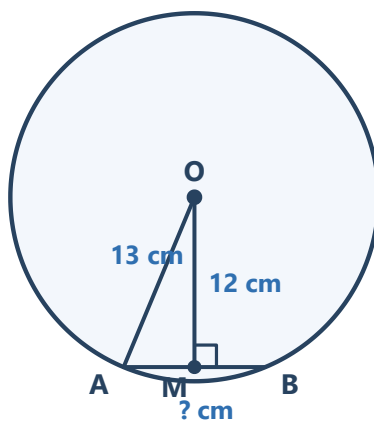
Answer: 8 cm

- 4 AB is a chord of a circle with centre O and radius 5 cm. The perpendicular distance from O to the chord is 3 cm. Work out the length of the chord AB .



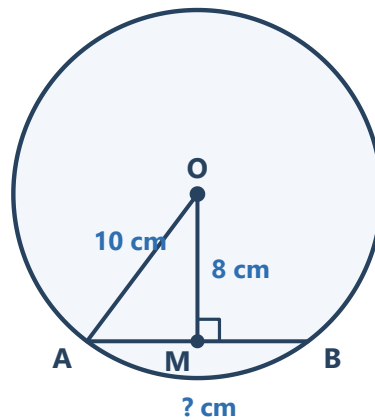
Answer: 8 cm

- 5 AB is a chord of a circle with centre O and radius 13 cm. The perpendicular distance from O to the chord is 12 cm. Work out the length of the chord AB .



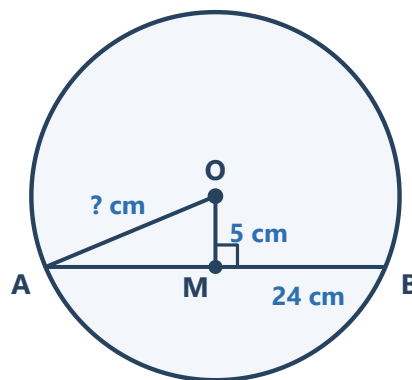
Answer: 10 cm

- 6 AB is a chord of a circle with centre O and radius 10 cm. The perpendicular distance from O to the chord is 8 cm. Work out the length of the chord AB .



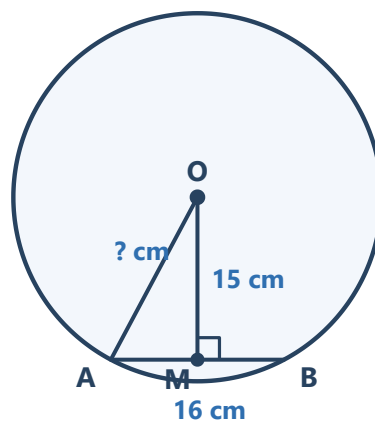
Answer: 12 cm

- 7 AB is a chord of length 24 cm in a circle with centre O . The perpendicular distance from O to the chord is 5 cm. Work out the radius of the circle.



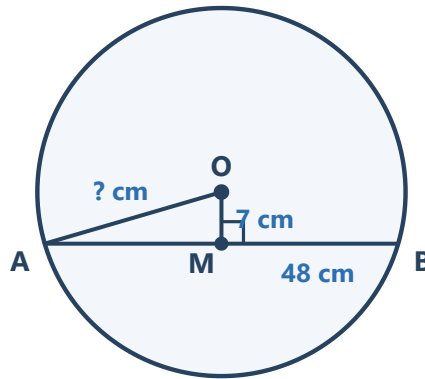
Answer: 13 cm

- 8 AB is a chord of length 16 cm in a circle with centre O . The perpendicular distance from O to the chord is 15 cm. Work out the radius of the circle.



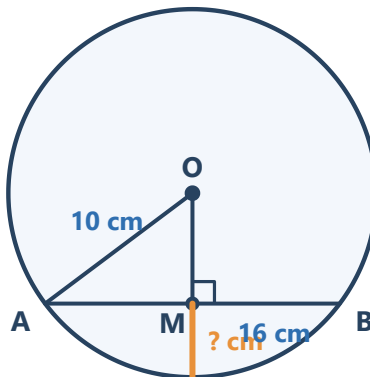
Answer: 17 cm

- 9 AB is a chord of length 48 cm in a circle with centre O . The perpendicular distance from O to the chord is 7 cm. Work out the radius of the circle.



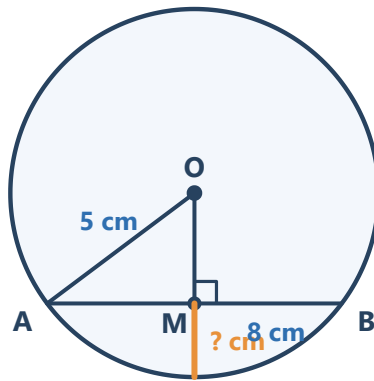
Answer: 25 cm

- 10 A circular pipe has radius 10 cm. Water fills the pipe to a level so that the water surface is a chord of length 16 cm. Work out the depth of the water at its deepest point (the vertical distance from the chord to the lowest part of the circle).



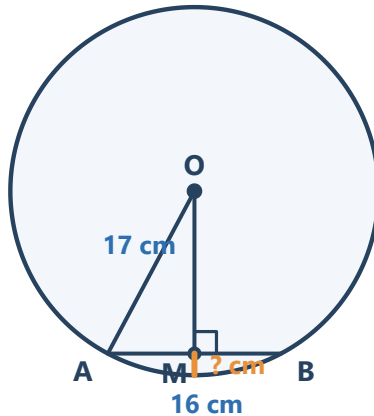
Answer: 4 cm

- 11 A circular pipe has radius 5 cm. Water fills the pipe to a level so that the water surface is a chord of length 8 cm. Work out the depth of the water at its deepest point (the vertical distance from the chord to the lowest part of the circle).



Answer: 2 cm

- 12** A circular pipe has radius 17 cm. Water fills the pipe to a level so that the water surface is a chord of length 16 cm. Work out the depth of the water at its deepest point (the vertical distance from the chord to the lowest part of the circle).



Answer: 2 cm

- 13** Two parallel chords of lengths 12 cm and 16 cm are drawn in a circle of radius 10 cm. Work out the possible distances between the two chords.

Answer: 2 cm or 14 cm

- 14** A chord of length 20 cm is drawn in a circle of radius 10 cm. Show that the chord is a diameter.

Answer: Distance from the centre = $\sqrt{(10^2 - 10^2)} = 0$, so the chord passes through the centre.

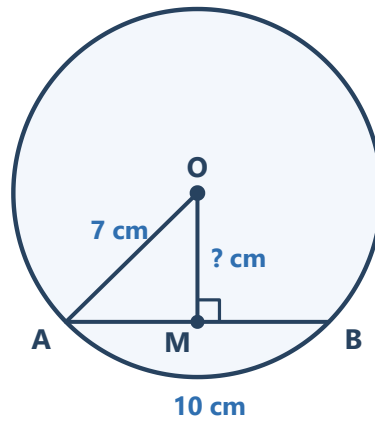
- 15** O is the centre of a circle. AB is a chord and M is its midpoint. Explain why angle OMA is 90° .

Answer: The line from the centre to the midpoint of a chord is perpendicular to the chord. (Triangle OAB is isosceles, so the median from O is also the altitude.)

Exercise 26I Chords, tangents and trigonometry (calculator allowed)

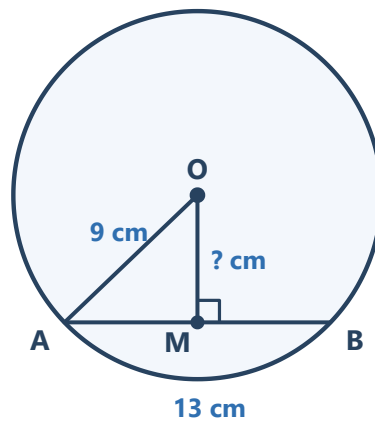
Calculator allowed

- 1** AB is a chord of length 10 cm in a circle of radius 7 cm. Work out the shortest distance from the centre O to the chord. Give your answer correct to 1 decimal place.



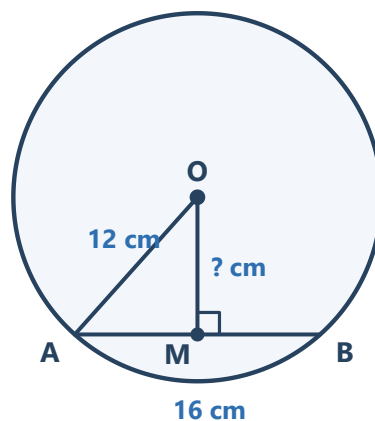
Answer: 4.9 cm

- 2 AB is a chord of length 13 cm in a circle of radius 9 cm. Work out the shortest distance from the centre O to the chord. Give your answer correct to 1 decimal place.



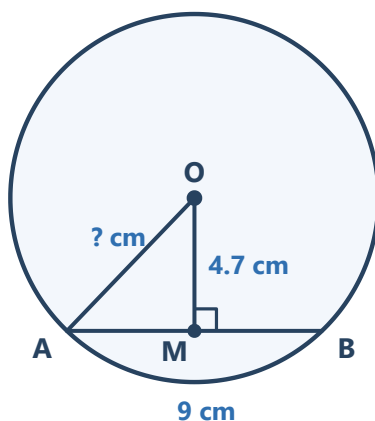
Answer: 6.2 cm

- 3 AB is a chord of length 16 cm in a circle of radius 12 cm. Work out the shortest distance from the centre O to the chord. Give your answer correct to 1 decimal place.



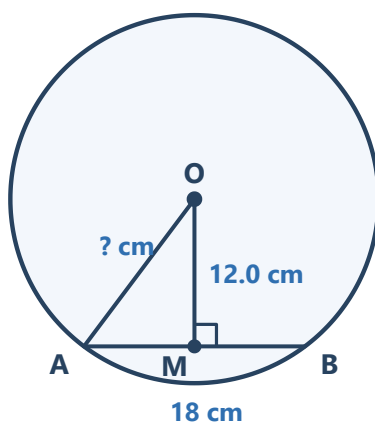
Answer: 8.9 cm

- 4 AB is a chord of length 9 cm in a circle with centre O . The perpendicular distance from O to the chord is 4.7 cm. Work out the radius of the circle. Give your answer correct to 1 decimal place.



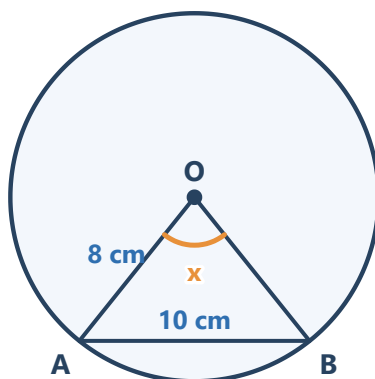
Answer: 6.5 cm

- 5 AB is a chord of length 18 cm in a circle with centre O . The perpendicular distance from O to the chord is 12.0 cm. Work out the radius of the circle. Give your answer correct to 1 decimal place.



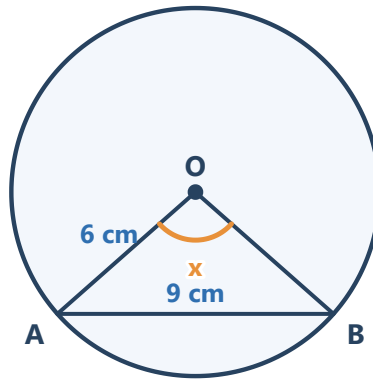
Answer: 15.0 cm

- 6 A and B are points on a circle with centre O and radius 8 cm. The chord $AB = 10$ cm. Work out the size of angle AOB . Give your answer correct to 1 decimal place.



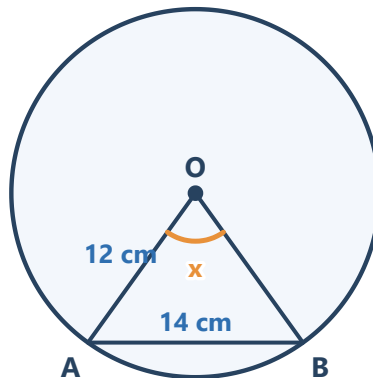
Answer: 77.4°

- 7 A and B are points on a circle with centre O and radius 6 cm. The chord $AB = 9$ cm. Work out the size of angle AOB . Give your answer correct to 1 decimal place.



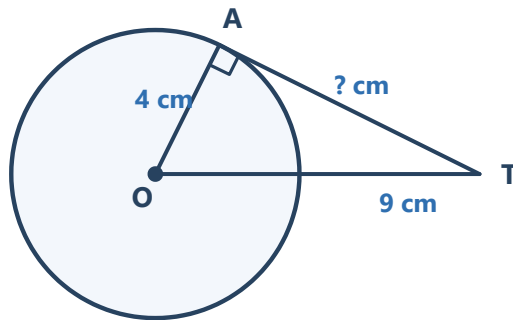
Answer: 97.2°

- 8 A and B are points on a circle with centre O and radius 12 cm. The chord $AB = 14$ cm. Work out the size of angle AOB . Give your answer correct to 1 decimal place.



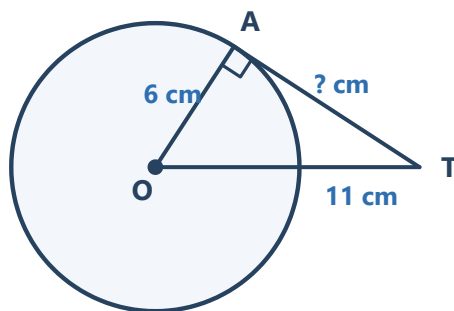
Answer: 71.4°

- 9 TA is a tangent to a circle with centre O , touching it at A . The radius of the circle is 4 cm and $OT = 9$ cm. Work out the length of TA .



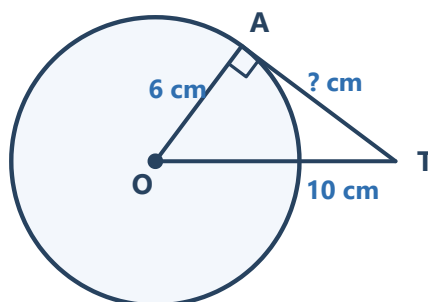
Answer: $\sqrt{65} = 8.1$ cm (1 d.p.)

- 10** TA is a tangent to a circle with centre O , touching it at A . The radius of the circle is 6 cm and $OT = 11$ cm. Work out the length of TA .



Answer: $\sqrt{85} = 9.2$ cm (1 d.p.)

- 11** TA is a tangent to a circle with centre O and radius 6 cm. $OT = 10$ cm. Work out angle ATO to 1 decimal place.



Answer: 36.9°

- 12** A chord AB of a circle of radius 8.5 cm is 13 cm long. Work out the area of triangle OAB , where O is the centre. Give your answer to 3 significant figures.

Answer: 35.6 cm²