

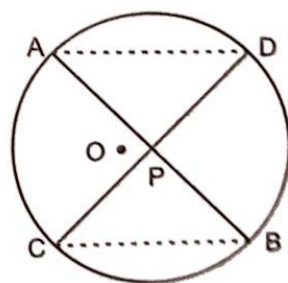
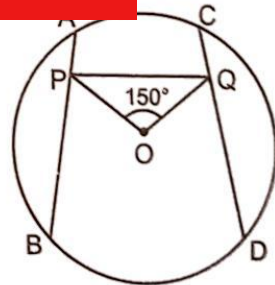
Exercise 4.1

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1. The radius of a circle is 10 cm and the length of one of its chord is 16 cm. Find the distance of the chord from the centre.
2. Prove that the line joining the mid-points of two parallel chord of a circle passes through the centre.
3. Two chords PQ and RS of a circle are parallel and AB is perpendicular bisector of PQ. Without using any construction, Prove that AB bisects RS.
4. Prove that the perpendicular bisector of a chord of a circle always passes through the centre.
5. Of any two chords of a circle, show that the one which is nearer to the centre is longer.
6. Two chords AB, CD of lengths 6 cm, 12 cm respectively of a circle are parallel. If the distance between AB and CD is 3 cm, find the radius of the circle.
7. A chord of length 30 cm is drawn at a distance of 8 cm from the centre of a circle. Find out the radius of the circle. [CBSE 2013]
8. In a circle of radius 5 cm, AB and CD are two parallel chords of length 8 cm and 6 cm respectively. Calculate the distance between the chords if

they are (i) on the same side of the centre (ii) on the opposite side of the centre.

9. Two chords AB and CD of a circle with centre O, intersect at E. If $\angle OEA = \angle OED$, Prove that $AB = CD$.
10. If a diameter of a circle bisects each of the two chords of the circle, prove that the chords are parallel.
11. Prove that the line joining the mid-points of two parallel chords of a circle passes through the centre of a circle.
12. Prove that a diameter is the longest chord in a circle.
13. Prove that the right bisector of a chord of a circle bisects the corresponding minor arc of the circle.
14. Show that if two chords of a circle bisect each other they must be diameters of the circle.
15. In a circle of radius 5 cm, AB and AC are two chords such that $AB = AC = 6$ cm. Find the length of the chord BC.
16. Prove that the line joining the midpoints of two equal chords of a circle subtends equal angles with the chord.
17. If a pair of opposite sides of a cyclic quadrilateral are equal, prove that other two sides are parallel.
18. Two circles of radii 10 cm and 8 cm intersect and the length of the common chords is 12 cm, find the distance between their centres.
19. Prove that the perpendicular bisectors of two chords of a circle intersect at the centre.
20. Prove that the line joining the mid-point of a chord of a circle passes through the mid-point of the corresponding minor arc.
21. In the given figure, AB and CD are two equal chords of a circle with centre O. OP and OQ are perpendicular on chords AB and CD, respectively. If $\angle POQ = 150^\circ$, find $\angle APQ$.
22. In an equilateral triangle prove that the centroid and the circumcentre of the triangle coincide.
23. If two circles intersect each other at two points, prove that the line joining their centres is the perpendicular bisector of their common chord.
24. In given figure, two equal chords AB and CD of a circle $C(O, r)$ intersect each other at P. Prove that $AD = CB$.



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Answers

- | | | |
|------------|-------------------|----------------|
| 1. 6 cm | 6. $3\sqrt{5}$ cm | 7. 17 cm |
| 15. 9.6 cm | 18. 13.29 cm | 21. 75° |

8. (i) 1 cm (ii) 7 cm