

CLASS-9
CHAPTER-10
CIRCLES

Exercise 10.4

1. If two equal chords of a circle intersect prove that the parts of one chord are separately equal to the parts of the other chord
2. If non-parallel sides of a trapezium are equal. prove that it is cyclic
3. If **P**, **Q** and **R** are the mid-points of the sides BC , CA and AB of a triangle and AD is the perpendicular from **A** on BC , prove that **P**, **Q**, **R** and **D** are concyclic
4. $ABCD$ is a parallelogram. A circle through **A**, **B** is so drawn that it intersects AD at **P** and BC at **Q**. prove that **P**, **Q**, **R** and **D** are concyclic.
5. Prove that angle bisector of any angle of a triangle and perpendicular bisector of the opposite side if intersect, they will intersect on the circumcircle of the triangle.
6. If two chords AB and CD of a circle intersect at right angles see Fig 1. Prove that

$$\begin{aligned} \text{arc}(CXA) + \text{arc}(DZB) &= \text{arc}(AYD) + \text{arc}(AYD) + \text{arc}(BWC) \\ &= \text{semi-circle} \end{aligned}$$

7. If ABC is an equilateral triangle inscribed in a circle and **P** be any point on the minor arc BC which does not coincide with **B** or **C**, prove that PA is angle bisector of $\angle BPC$
8. In Fig.2, AB and CD are two chords of a circle intersecting each other at point **E** prove that

$$\begin{aligned} \angle AEC &= \frac{1}{2}(\text{Angle subtended by arc } CXA \text{ at centre} \\ &\quad + \text{angle subtended by arc } DYB \text{ at the centre}). \end{aligned}$$

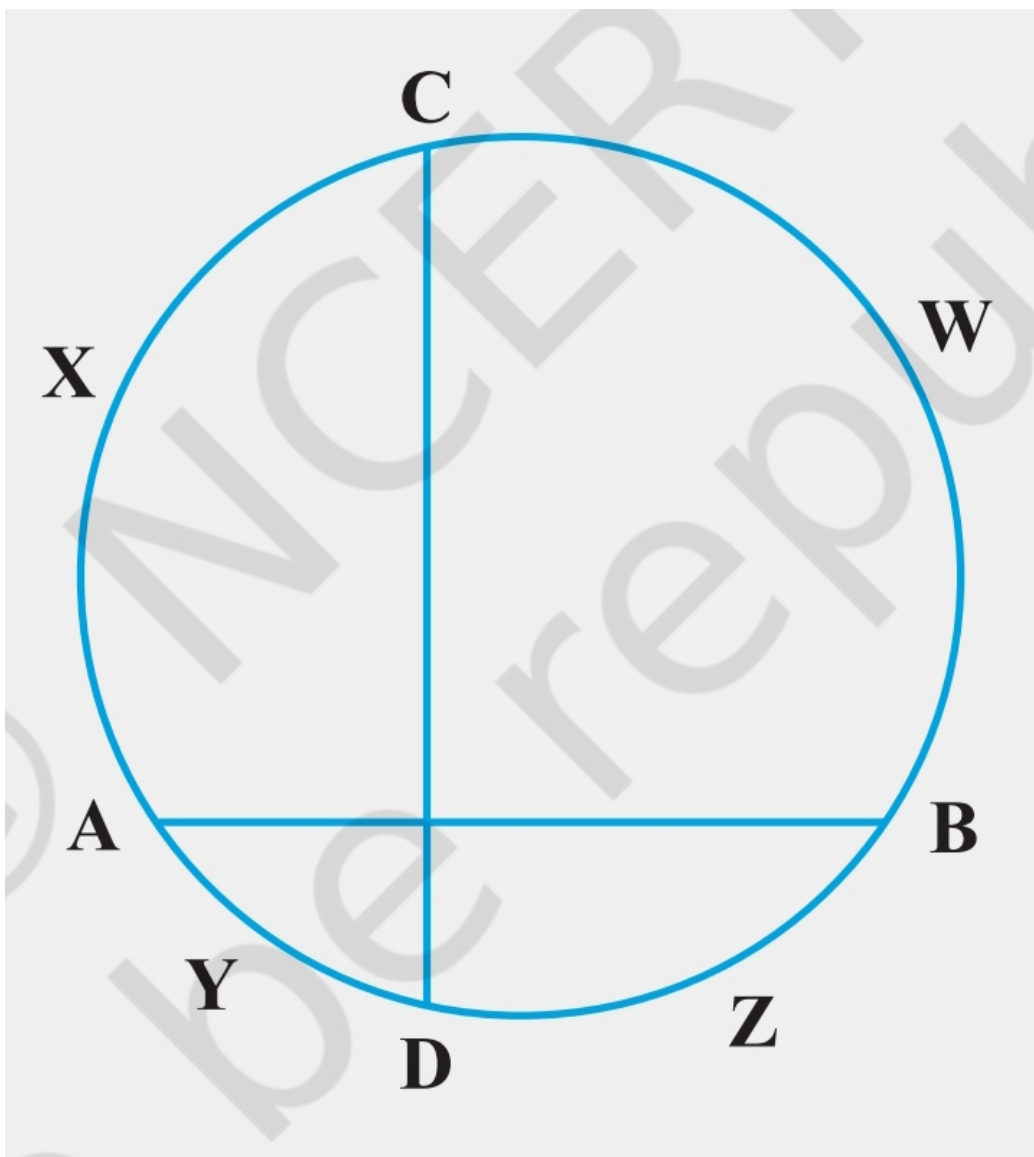


Figure 1

9. If bisectors of opposite angles of a cyclic quadrilateral $ABCD$ intersect the circle, circumscribing it at the points P and Q , prove that PQ is a diameter of the circle,

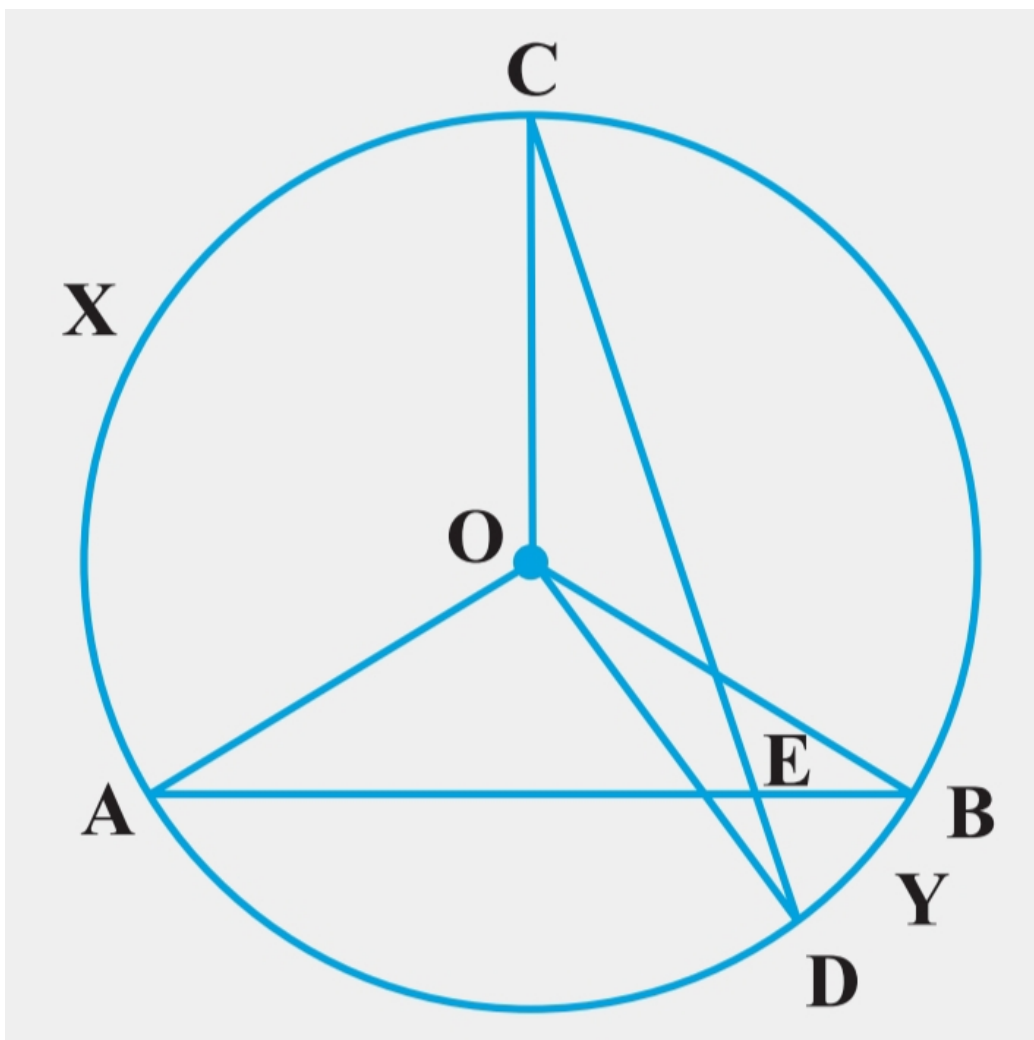


Figure 2

10. A circle has radius $\sqrt{442}$ cm it is divided into two segments by a chord of length 2cm. Prove that the angle subtended by the chord at a point in major segment is 45° .
11. Two equal chords AB and CD of a circle when produced intersect at a point P . Prove that $PB = PD$
12. AB and AC are two chords of a circle of radius r such that $AB = 2AC$.

If **P** and **Q** are the distances of AB and AC from the centre, prove that $4q^2 = p^2 + 3r^2$

13. In Fig 3, **O** is the centre of the circle, $\angle BCO = 30^\circ$. Find x and y

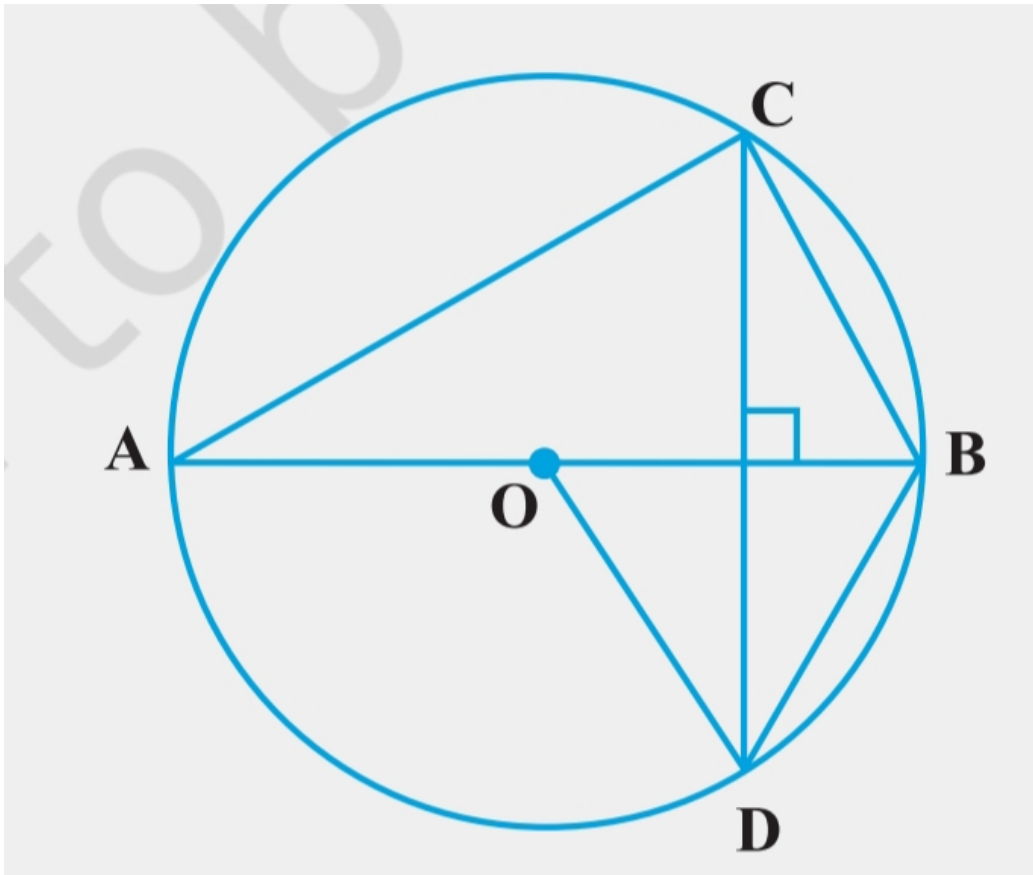


Figure 3

14. In fig 4, **O** is the centre of the circle, $BD = OD$ and $CD \perp AB$. Find $\angle CAB$

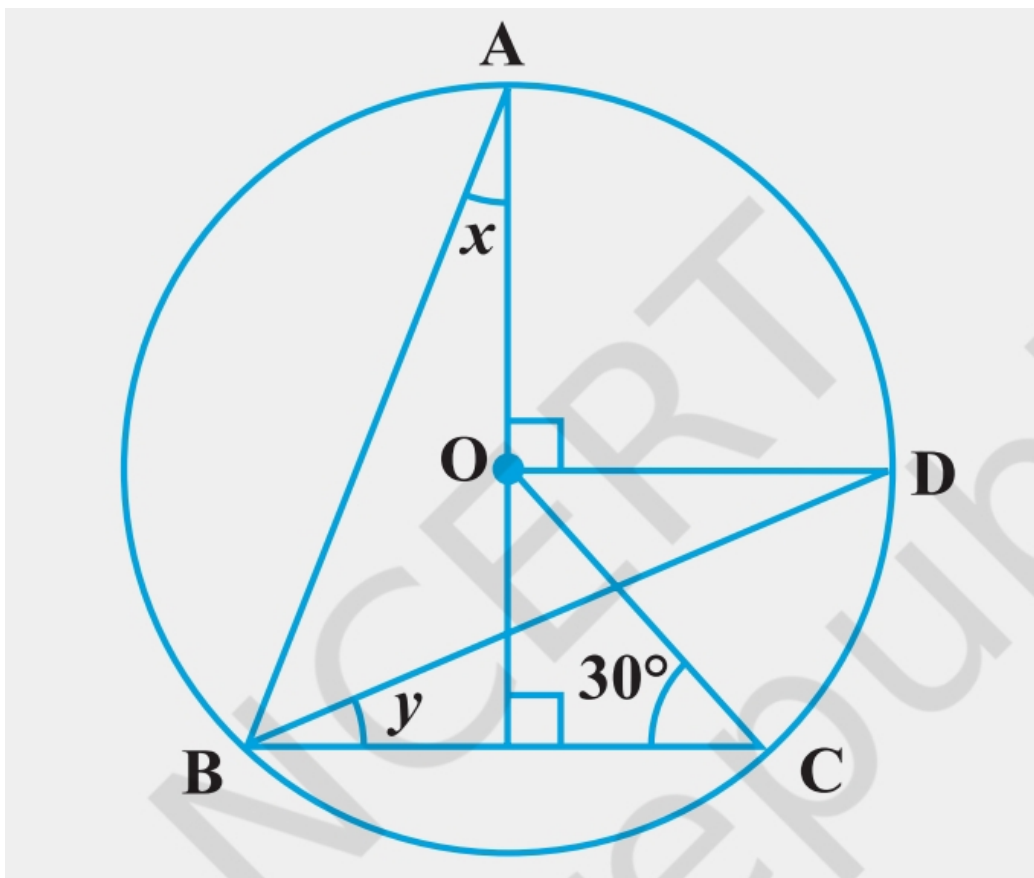


Figure 4