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 $\mathbf{P}, \mathbf{Q}$ and $\mathbf{R}$ 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 $\mathbf{P}, \mathbf{Q}, \mathbf{R}$ and $\mathbf{D}$ are concyclic

4. $ABCD$ is a parallelogram. A circle through $\mathbf{A}$, $\mathbf{B}$ is so drawn that it intersects AD at $\mathbf{P}$ and BC at $\mathbf{Q}$. prove that $\mathbf{P}$, $\mathbf{Q}$, $\mathbf{R}$ and $\mathbf{D}$ are concyclic.

5. Prove that angle bisector of any angle of a triangle and perpendicular bisector of the opposite side if intersect, they will intersent on the circumcircle of the triangle.

6. If two chords AB and CD of a circle AYDZBWCX intersect at right angles see Fig 1, prove that

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

7. If ABC is an equilateral triangle inscribed in a circle and $\mathbf{P}$ be any point on the minor arc BC which does nat coincide with $\mathbf{B}$ or $\mathbf{C}$, 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 $\mathbf{E}$ prove that $\angle AEC = \frac{1}{2}$ c Angle subtended by arc CXA at centre + angle subtended by arc $DY\ B$ at the centre).

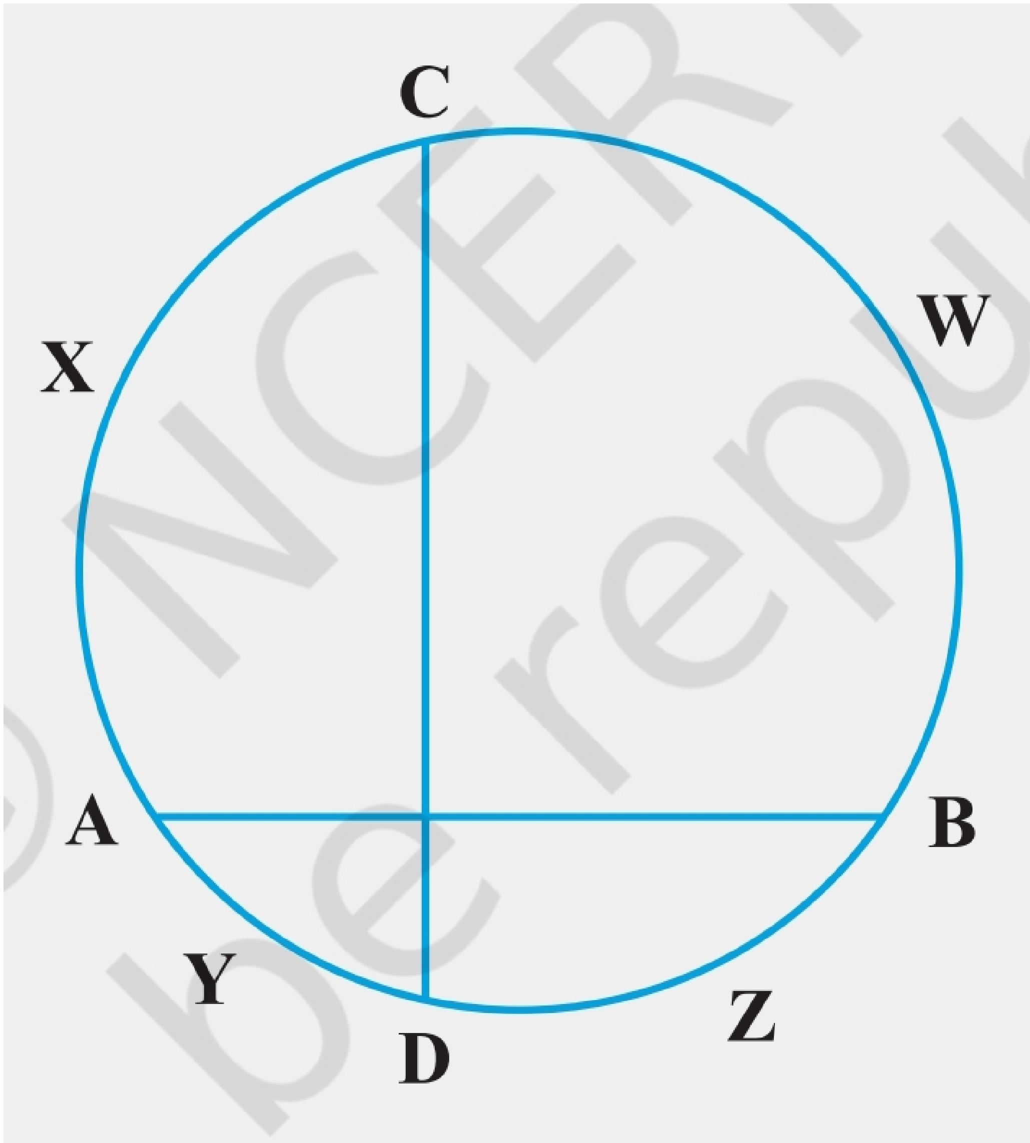

Figure 1

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,

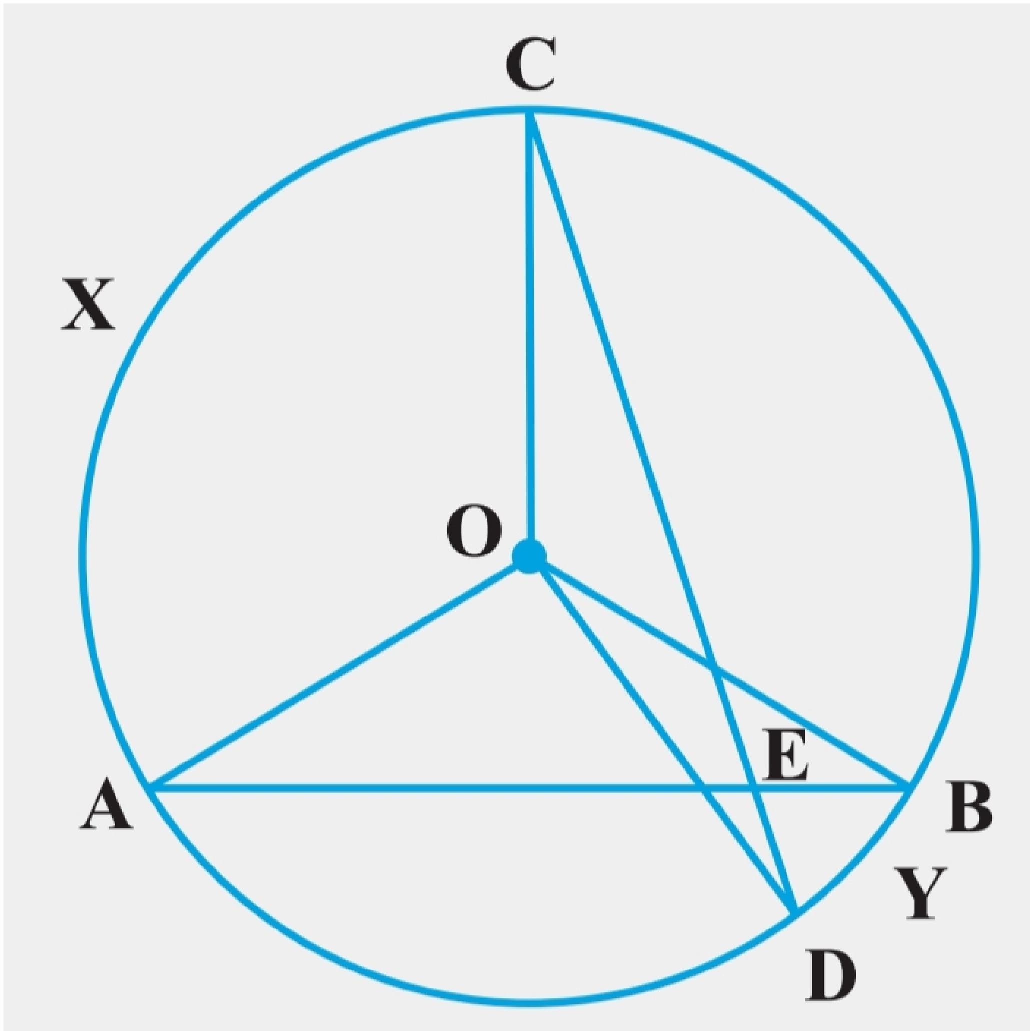

Figure 2

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, $\angle BCO = 30°$.Find x and y

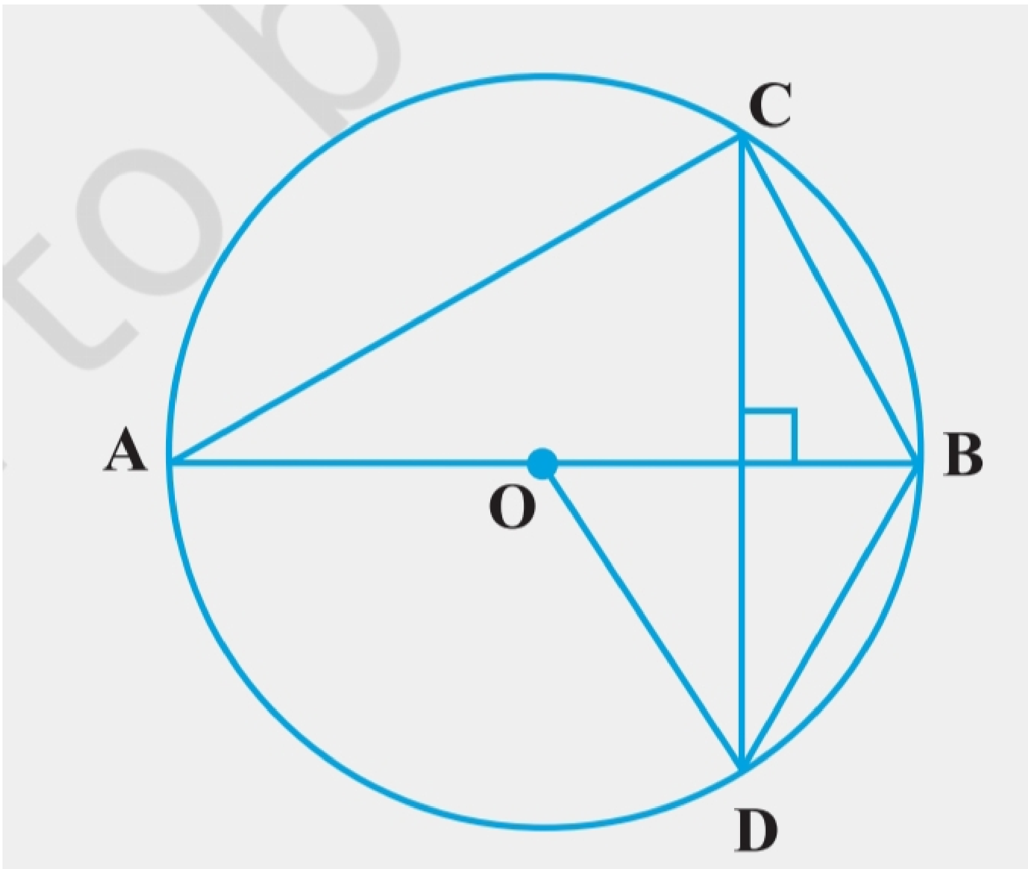

Figure 3

14. In fig 4, **O** is the centre of the circle $BD = 0D$ and $CD \perp AB$. Find $\angle CAB$

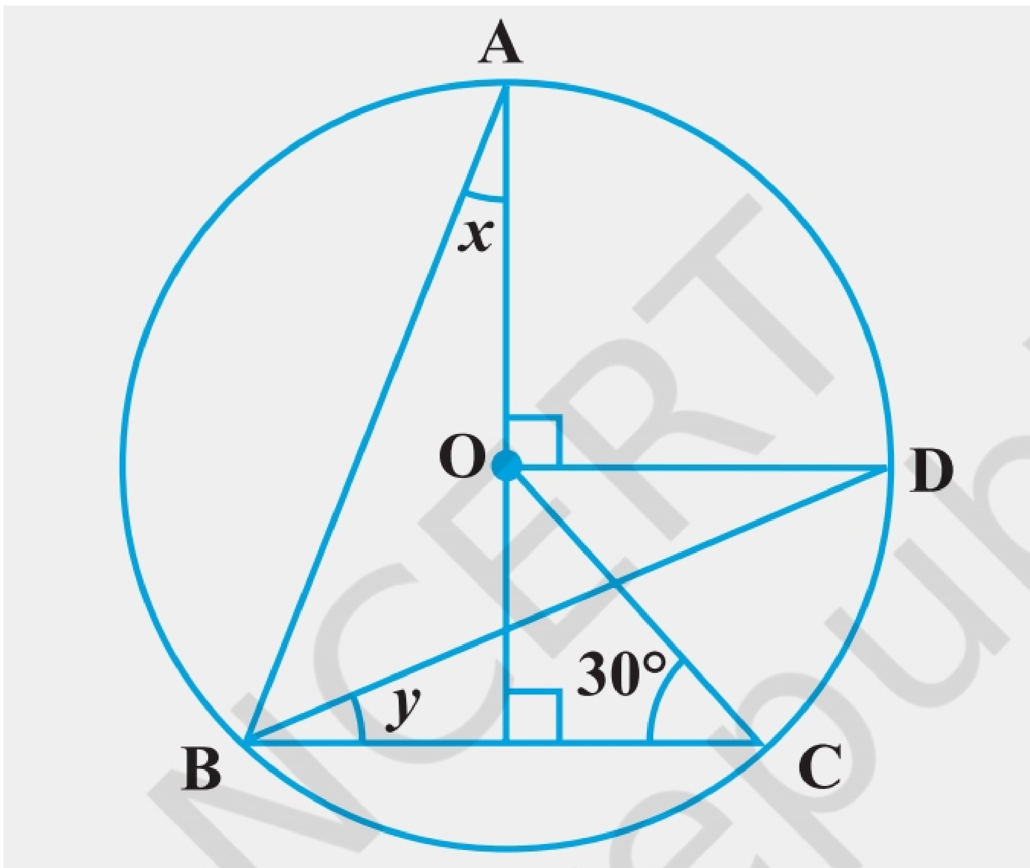

Figure 4