

CHAPTER-10

1 EXERCISE - 10.3

1. If arcs AXB and CYD of a circle are congruent, find the ratio of AB and CD .
2. If the perpendicular bisector of a chord AB of a circle $PXAQBY$ intersects the circle at \mathbf{P} and \mathbf{Q} , prove that $\text{arc } PXA \cong \text{Arc } PYB$.
3. \mathbf{A}, \mathbf{B} and \mathbf{C} are three points on a circle. Prove that the perpendicular bisectors of AB , BC and CA are concurrent.
4. AB and AC are two equal chords of a circle. Prove that the bisector of the angle BAC passes through the centre of the circle.
5. If a line segment joining mid-points of two chords of a circle passes through the centre of the circle, prove that the two chords are parallel.
6. $ABCD$ is such a quadrilateral that \mathbf{A} is the centre of the circle passing through \mathbf{B}, \mathbf{C} and \mathbf{D} . Prove that $\angle CBD + \angle CDB = \frac{1}{2}\angle BAD$
7. \mathbf{O} is the circumcentre of the triangle \mathbf{ABC} and \mathbf{D} is the mid-point of the base BC . Prove that $\angle BOD = \angle A$.
8. On a common hypotenuse AB , two right triangles ACB and ADB are situated on opposite sides. Prove that $\angle BAC = \angle BDC$.
9. Two chords AB and AC of a circle subtend angles equal to 90° and 150° , respectively at the centre. Find $\angle BAC$, if AB and AC lie on the opposite sides of the centre.
10. If BM and CN are the perpendiculars drawn on the sides AC and AB of the triangle ABC , prove that the points $\mathbf{B}, \mathbf{C}, \mathbf{M}$ and \mathbf{N} are concyclic.
11. If a line is drawn parallel to the base of an isosceles triangle to intersect its equal sides, prove that the quadrilateral so formed is cyclic.
12. If a pair of opposite sides of a cyclic quadrilateral are equal, prove that its diagonals are also equal.
13. The circumcentre of the triangle ABC is \mathbf{O} . Prove that $\angle OBC + \angle BAC = 90^\circ$.

14. A chord of a circle is equal to its radius. Find the angle subtended by this chord at a point in major segment.
15. In Fig1 $\angle ADC = 130^\circ$ and chord $BC =$ chord BE . Find $\angle CBE$.

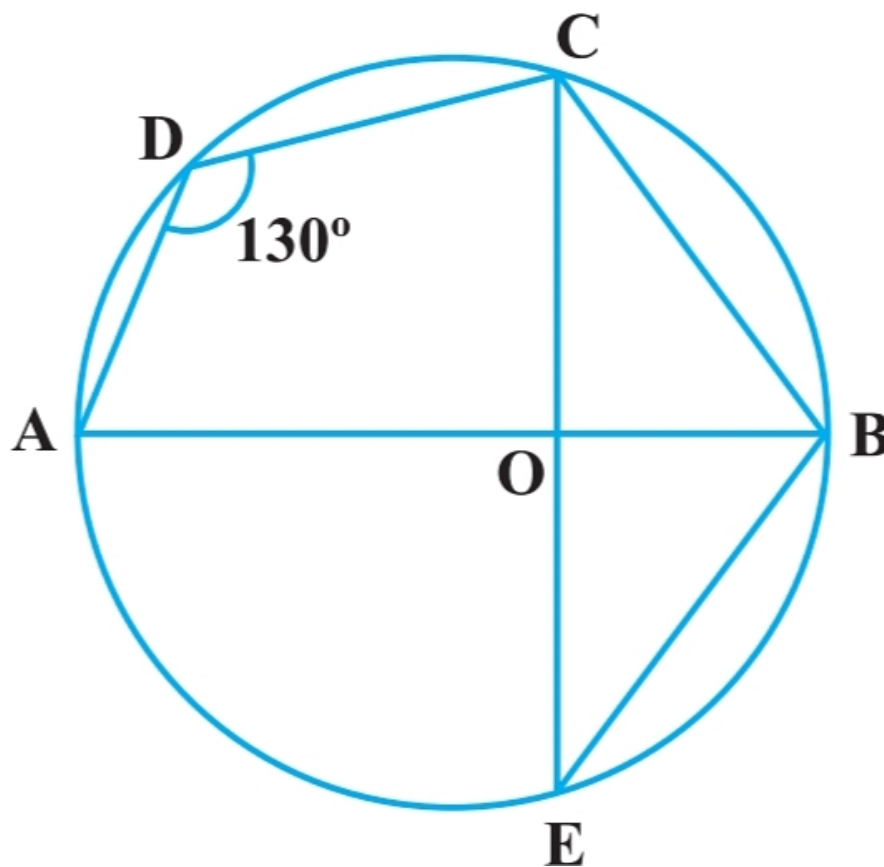


Figure 1

16. In Fig2 $\angle ACB = 40^\circ$. Find $\angle OAB$.
17. A quadrilateral $ABCD$ is inscribed in a circle such that AB is a diameter and $\angle ABC = 130^\circ$. Find $\angle BAC$.
18. Two circles with centres O and O' intersect at two points A and B . A line PQ is drawn parallel to OO' through A (or B) intersecting the circles at P and Q . Prove that $PQ = 2 OO'$.

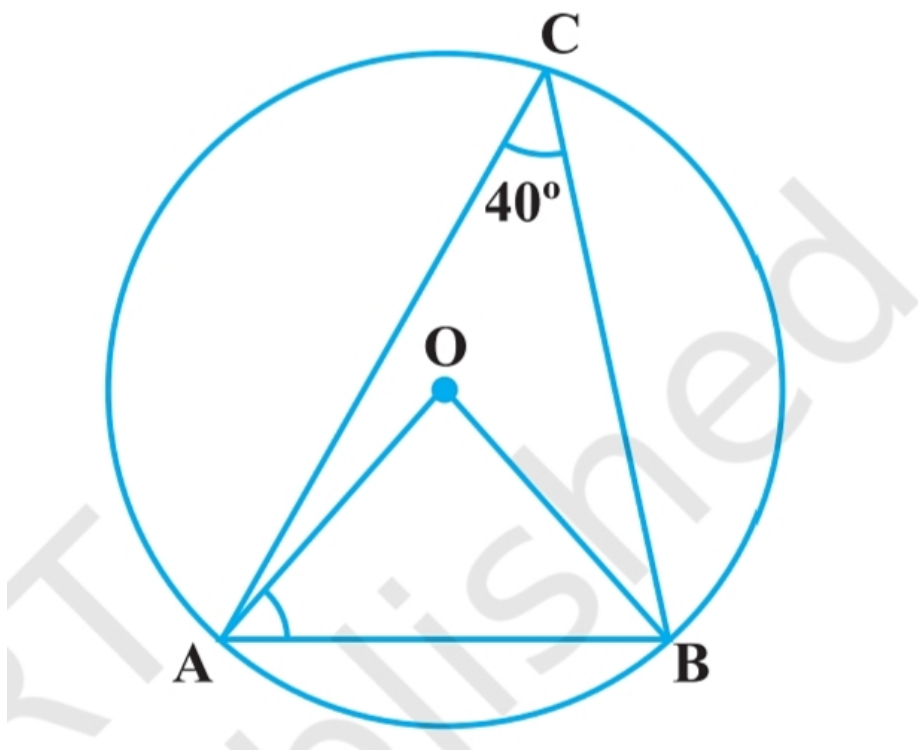


Figure 2

19. In Fig3 AOB is a diameter of the circle and C, D, E are any three points of the semi-circle. Find the value of $\angle ACD + \angle BED$.
20. In Fig4 $\angle OAB = 30^\circ$ and $\angle OCB = 57^\circ$. Find $\angle BOC$ and $\angle AOC$.

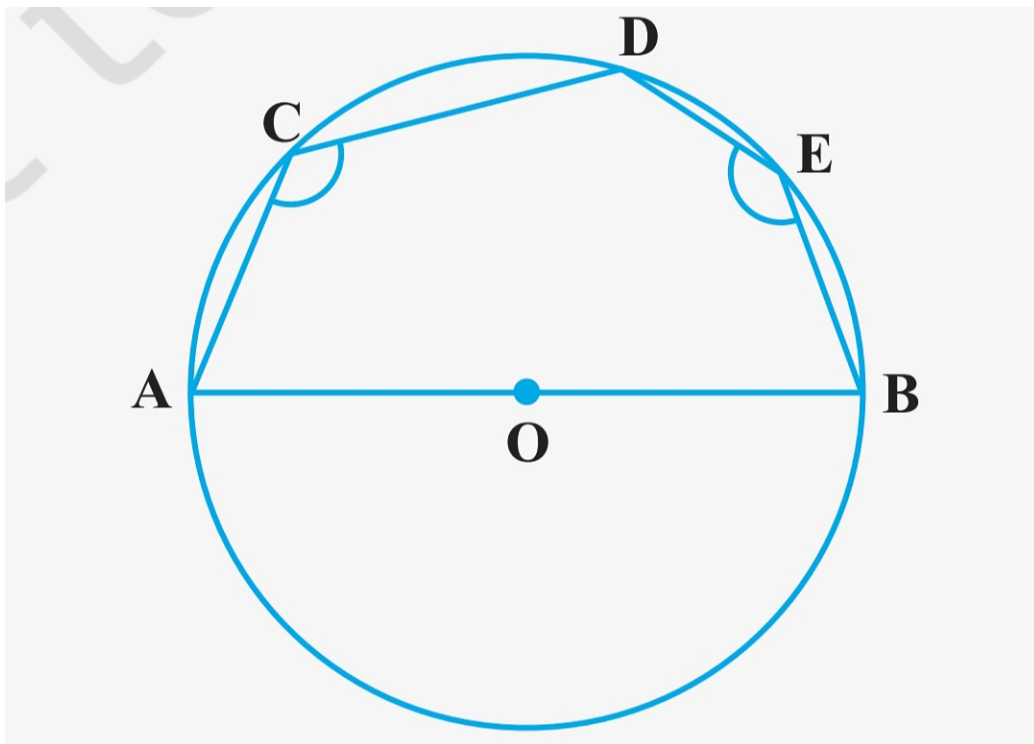


Figure 3

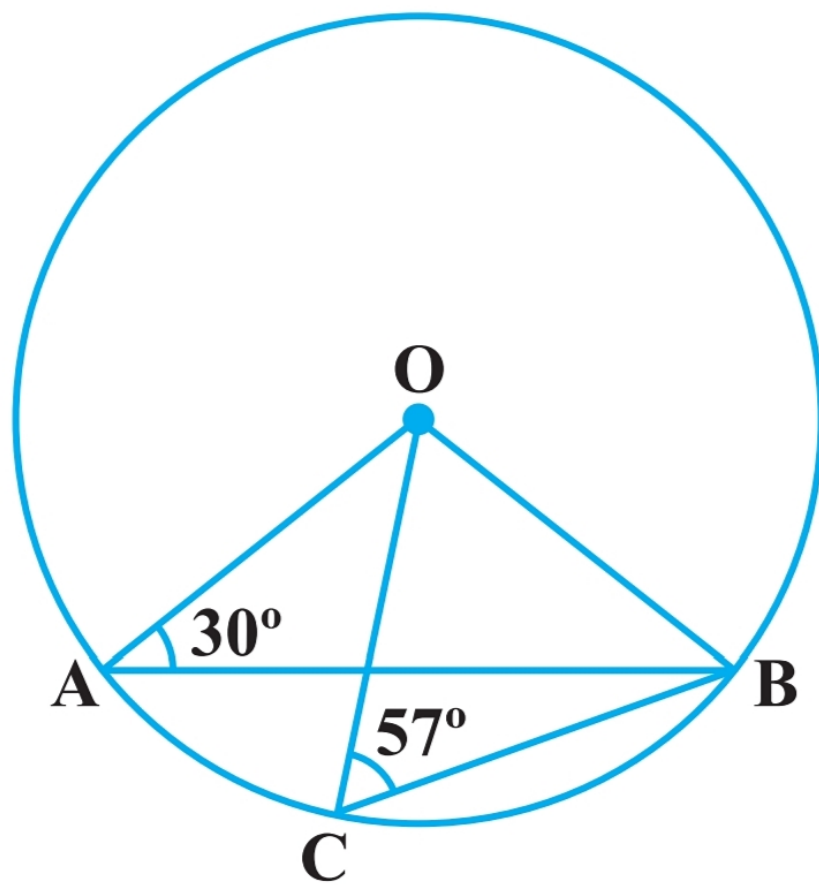


Figure 4