MATHS

BOOKS - NCERT MATHS (ENGLISH)

CIRCLES

Exercise 10 1

1. AD is a diameter of a circle and AB is a chord. If AD = 34cm, AB = 30cm, the distance of AB form the centre of the circle is

A. 17 cm

B. 15 cm

C. 4 cm

D. 8 cm

Answer: D

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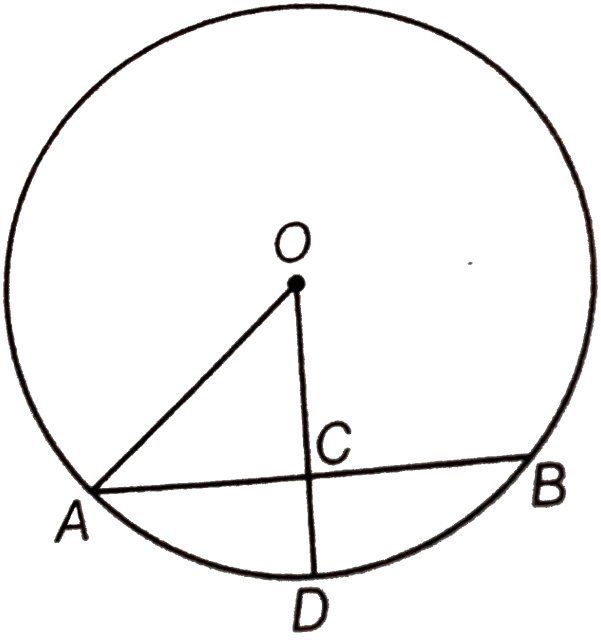
2. In figure, if OA=5cm, AB=8 cm and OD is perpendicular to AB, then CD is equal to



A. 2 cm

B. 3 cm

C. 4 cm

D. 5 cm

Answer: A

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3. If AB =12cm, BC=16 cm and AB is perpendicular to BC, then the radius of the circle passing through the points A, B and C is

A. 6 cm

B. 8 cm

C. 10 cm

D. 12 cm

Answer: C

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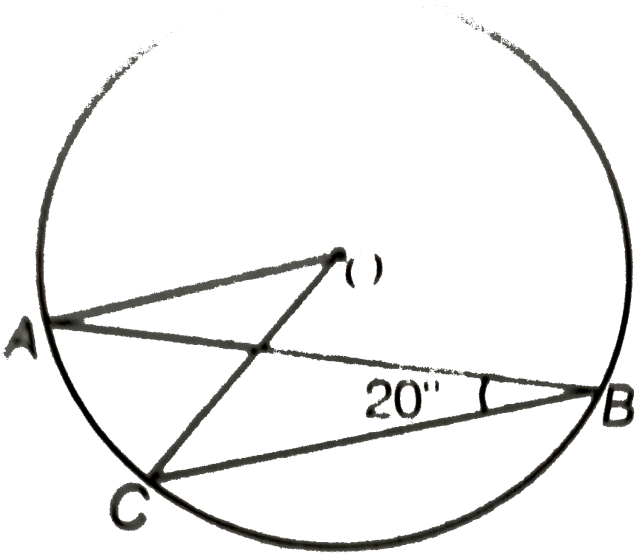
4. If figure, if$\angle ABC = 20^\circ$, then$\angle AOC$ is equal to



A. 20°

B. 40°

C. 60°

D. 10°

Answer: B

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5. If AOB is a diameter of the circle and AC=BC, then $\angle CAB$ is equal to

A. 30°

B. 60°

C. 90°

D. 45°

Answer: B

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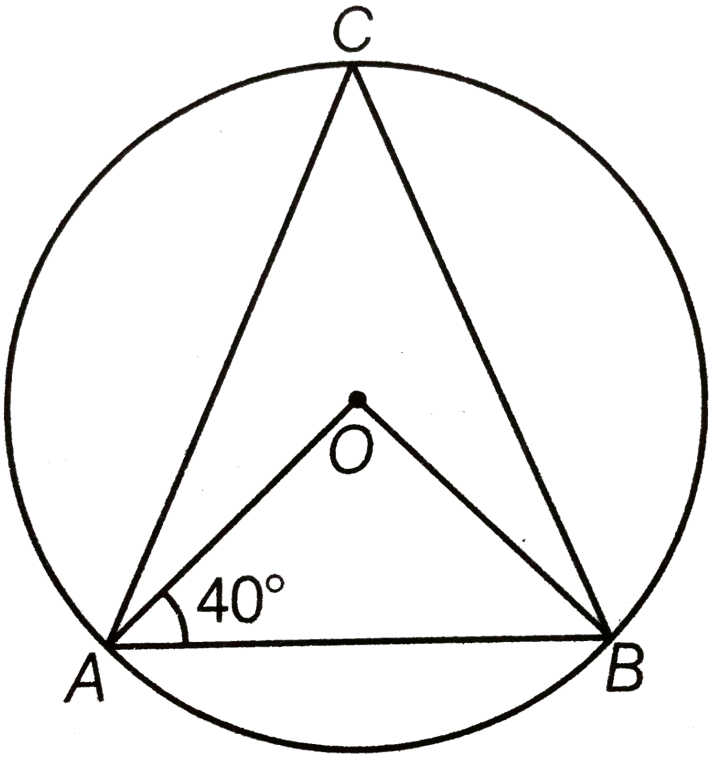
6. In figure, if $\angle OAB = 40^\circ$, then $\angle ACB$ is equal to



A. 50°

B. 40°

C. 60°

D. 70°

Answer: A

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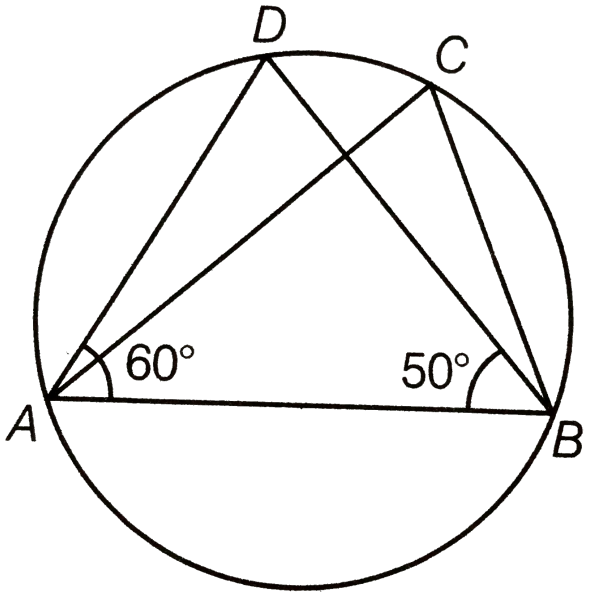
7. In figure, if $\angle DAB = 60^\circ$, $\angle ABD = 50^\circ$, then $\angle ACB$ is equal to



A. 60°

B. 50°

C. 70°

D. 80°

Answer: C

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8. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and $\angle ADC = 140^\circ$, than $\angle BAC$ is equal to

A. 80°

B. 50°

C. 40°

D. 30°

Answer: B

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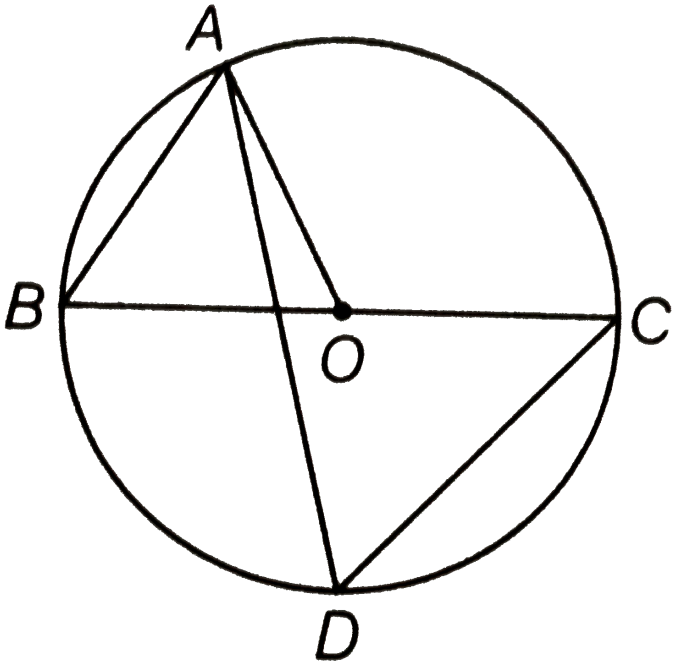
9. In figure, BC is a diameter of the circle and $\angle BAO = 60^\circ$. Then, $\angle ADC$ is equal to



A. 60°

B. 45°

C. 50°

D. 120°

Answer: A

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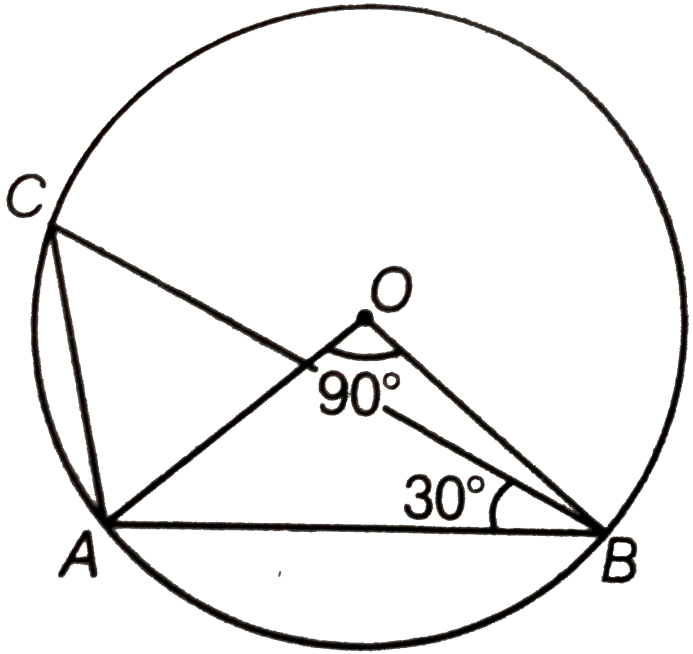
10. In figure, if $\angle AOB = 90^\circ$ and $\angle ABC = 30^\circ$, then $\angle CAO$ is equal to



A. 30°

B. 45°

C. 90°

D. 60°

Answer: D

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Exercise 10 2

1. Two chords AB and CD of a circle are each at distances 4 cm from the centre. Then,

A. AB=CD.

B. AB is not equal to CD.

C. AB there is no relation between CD.

D. AB is greater than CD.

Answer: A

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2. Two chords AB and AC of a circle with centre O are on the opposite sides of OA. Then, $\angle OAB = \angle OAC$.

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3. The congruent circles with centres Oand O' intersect at two points A and B. Then, $\angle AOB = \angle AO'B$.

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4. Through three collinear points a circle can be draw.

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5. A circle of radius 3 cm can be drawn through two points A, B such that AB=6 cm. State true or false

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6. If AOB is a diameter of a circle and C is a point on the circle, then $AC^2 + BC^2 = AB^2$.

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7. ABCD is a cyclic quadrilateral such that $\angle A = 90^\circ, \angle B = 70^\circ, \angle C = 95^\circ$ and $\angle D = 105^\circ$.

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8. If A, B, C and D are four points such that $\angle BAC = 30^\circ$ and $\angle BDC = 60^\circ$,then D is the centre of the circle through A, B and C.

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9. If A, B, C and D are four points such that $\angle BAC = 45^\circ$ and $\angle BDC = 45^\circ$, then A, B, C and D are concyclic.

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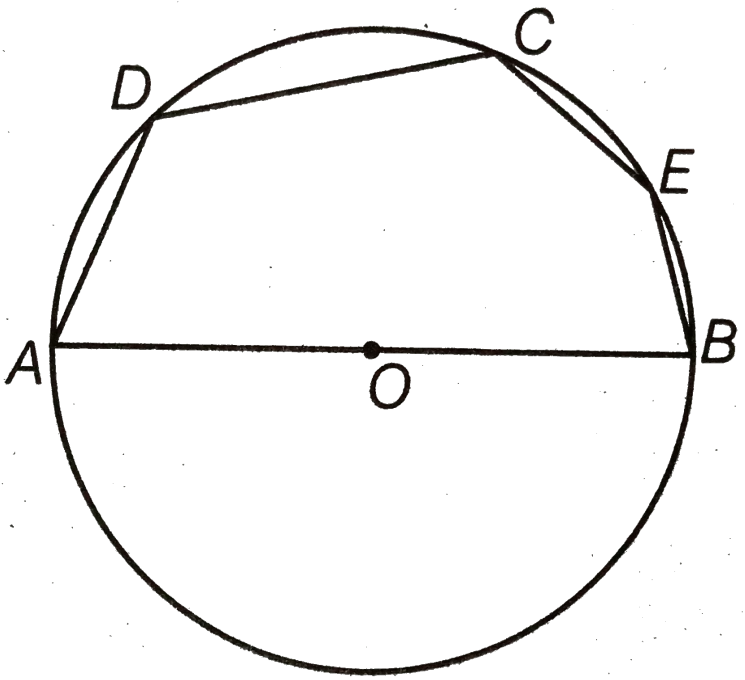
10. In figure, if AOB is a diameter and $\angle ADC = 120^\circ$, then $\angle CAB = 30^\circ$.



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Exercise 10 3

1. If two arcs of a circle (or of congruent circles) are congruent, then corresponding chords are equal.

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2. If the perpendicular bisector of a chord AB of a circle PXAQBY intersects the circle at P and Q, prove that arc $PXA \cong \text{arc } PYB$.

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3. A, B and C are three points on a circle. Prove that the perpendicular bisectors of AB, BC and CA are concurrent.

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4. Two chords AB and AC of a circle are equal. Prove that the centre of the circle lies on the angle bisector of $\angle BAC$.

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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.

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6. $ABCD$ is such a quadrilateral that A is the centre of the circle passing through B, C and D. Prove that $\angle CBD + \angle CDB = \frac{1}{2}\angle BAD$.

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7. If O is the circumcentre of a ABC and $OD \perp BC$, prove that $\angle BOD = \angle a$.

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8. On a common hypotenuse AB, two right angled triangles, ACB and ADB are situated on opposite sides. Prove that $\angle BAC = \angle BDC$.

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9. Two chords AB and AC of a circle subtends angles equal to $90^\circ \text{ and } 150^\circ$, respectively at the centre. Find$\angle BAC$, if AB and AC lie on the opposite sides of the centre.

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10. If BM and CN are the perpendiculars drawn on the sides AC and BC of the ΔABC, prove that the points B, C, M and N are concyclic.

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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.

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12. If the two sides of a pair of opposite sides of a cyclic quadrilateral are equal, prove that its diagonals are equal.

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13. The circumcentre of the ΔABC is O. Prove that $\angle OBC + \angle BAC = 90^\circ$.

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14. A chord of a circle is equal to the radius of the circle find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

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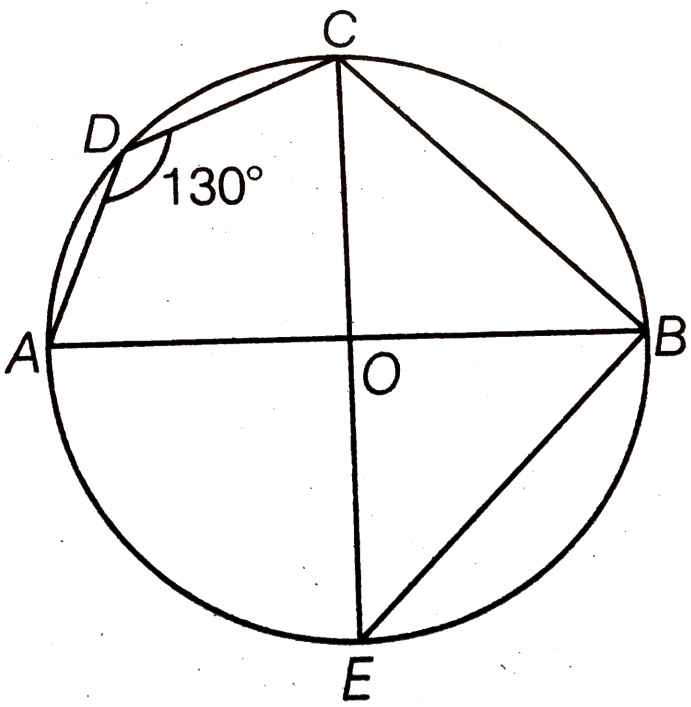
15. In figure, $\angle ADC = 130^\circ$ and chord BC=chord BE. Find $\angle CBE$.



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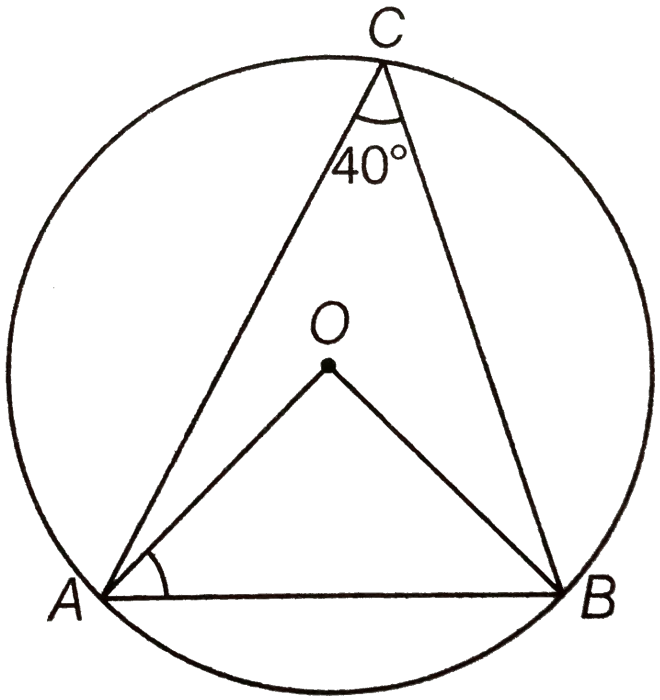
16. In figure, $\angle ACB = 40^\circ$. Find $\angle OAB$.



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17. In Figure, $ABCD$ is a cyclic quadrilateral whose side AB is a diameter of the circle through A, B, C, D. If $(\angle ADC) = 130^0$, find $\angle BAC$

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18. Two circles whose centres are O and O' intersect at P. Through P, a line l parallel to OO' intersecting the circles at C and D is drawn. Prove that $CD = 2\,OO'$

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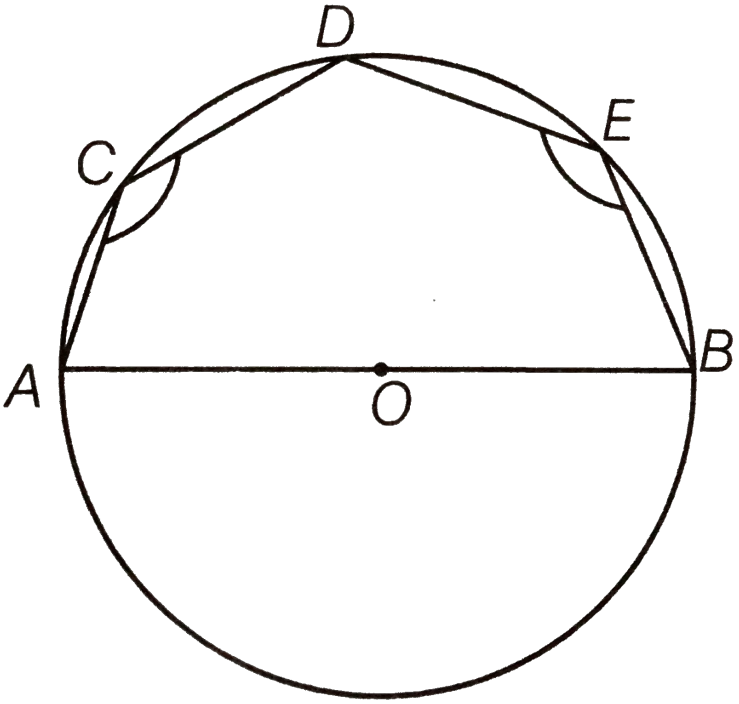
19. In figure, AOB is a diameter of the circle and C, D, E are any three points on the semi-circle. Find the value of

$\angle ACD + \angle BED.$



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20. In figure, $\angle OAB = 30^\circ$ and $\angle OCB = 57^\circ$. Find $\angle BOC$ and $\angle AOC$

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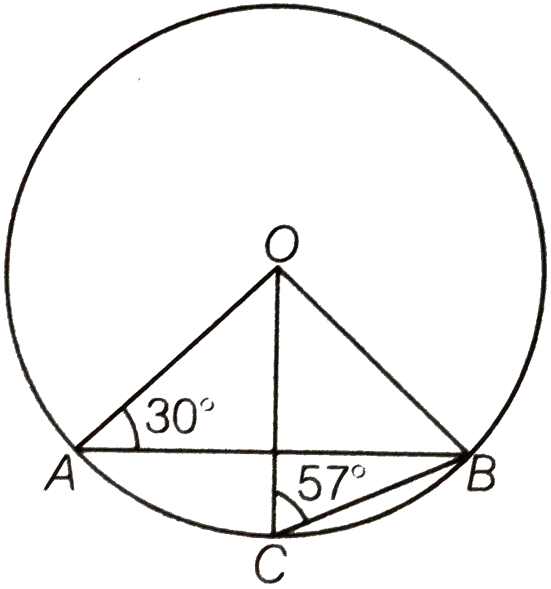

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Exercise 10 4

1. If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.

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2. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

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3. P, Q and R are, respectively, the mid points of sides BC, CA and AB of a triangle ABC

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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, C and D are concyclic.

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

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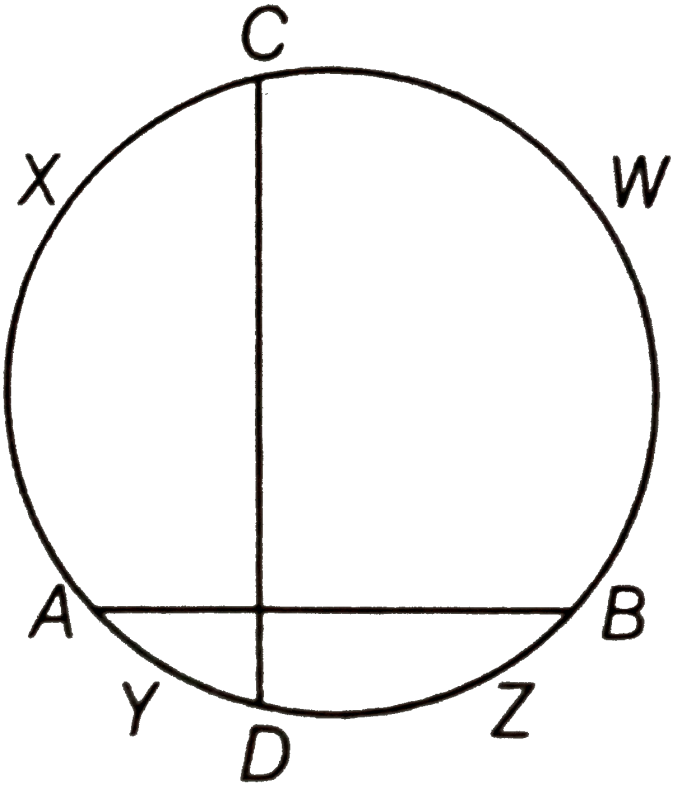
6. If two chords AB and CD of a circle AYDZBWCX intersect at right angles, then prove that arc CXA+arc DZB=arc AYD+arc

BWC =semi-circle.



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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, then prove that PA is angle bisector of $\angle BPC$.

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8. In the figure, AB and CD are two chords of a circle, interacting each other at a point E. Prove that $\angle AEC$ = 1/2(angle subtended by arc CXA. at the centre + angle subtended by arc DYB at the centre).

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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.

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10. A circle has radius $\sqrt{2}$cm it is divided into 2 segments by a chord of length 2cm prove that angle subtended by the chord at a point in major segment is 45°

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11. AB and CD are equal chords of a circle whose centre is O, when produced these chords meet at E,Prove that $EB = ED$.

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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 $4q^2 = p^2 + 3r^2$.

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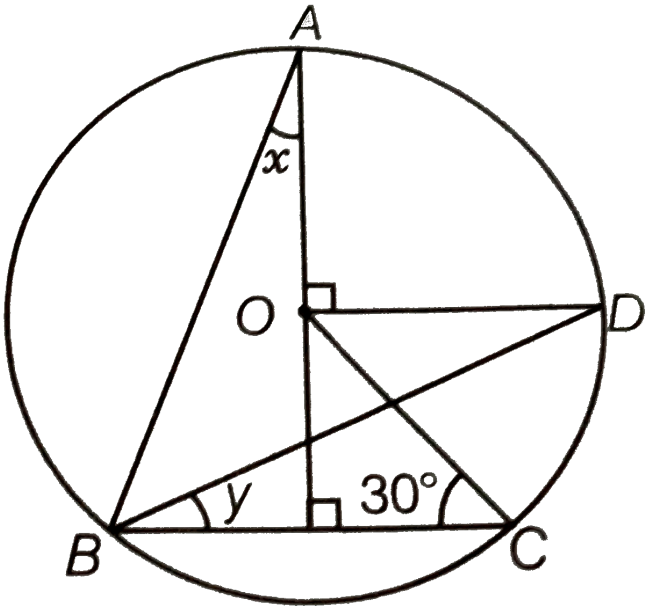
13. In figure, O is the centre of the circle $\angle BCO = 30^\circ$. Find X and Y.



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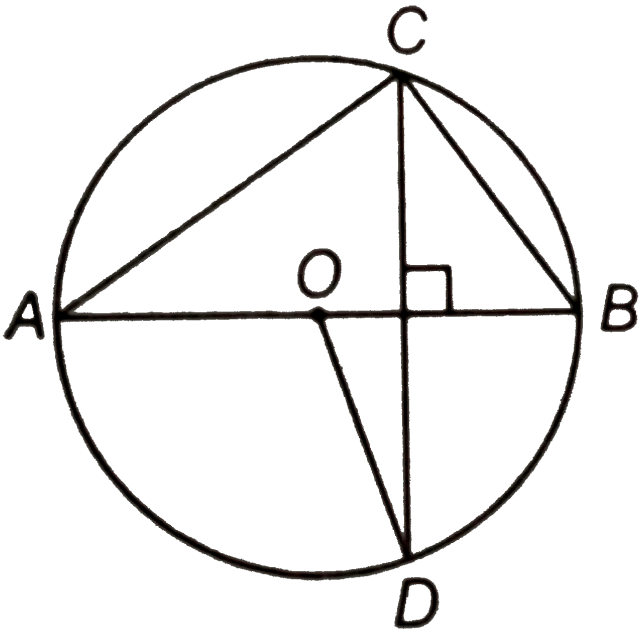
14. If figure, O is the centre of the circle, $BD = OD$ and $CD \perp AB$. Find $\angle CAB$.



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