MATHS

NCERT - NCERT Maths(Telugu)

CIRCLES

Example

1. Construct a circumcircle of the triangle ABC where AB = 5cm, $\angle B = 75^\circ$ and BC = 7 cm.

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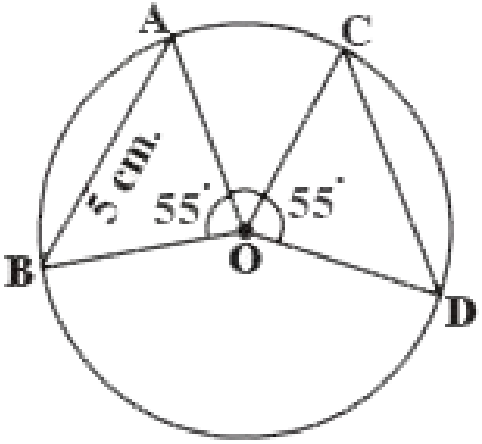
2. In the figure, O is the centre of the circle. Find the length of CD, if AB = 5 cm.



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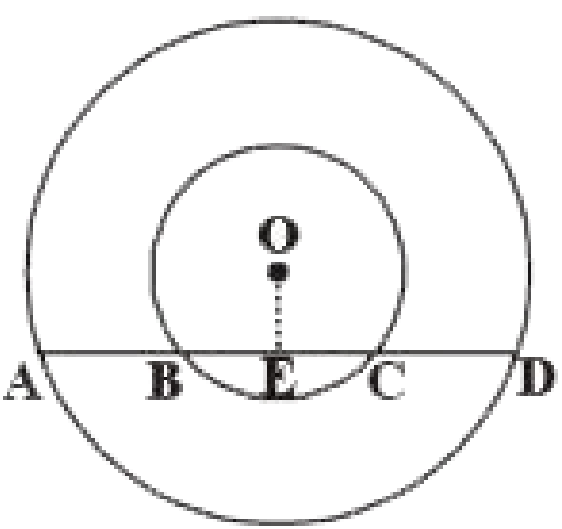
3. In the adjacent figure, there are two concentric circles with centre 'O'.

Chord AD of the bigger circle intersects the smaller circle at B and C.

Show that AB = CD.



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4. Let 'O' be the centre of a circle, PQ is a diameter, then prove that $\angle PRQ = 90^\circ$ (OR) Prove that angle in a semi-circle is right angle.

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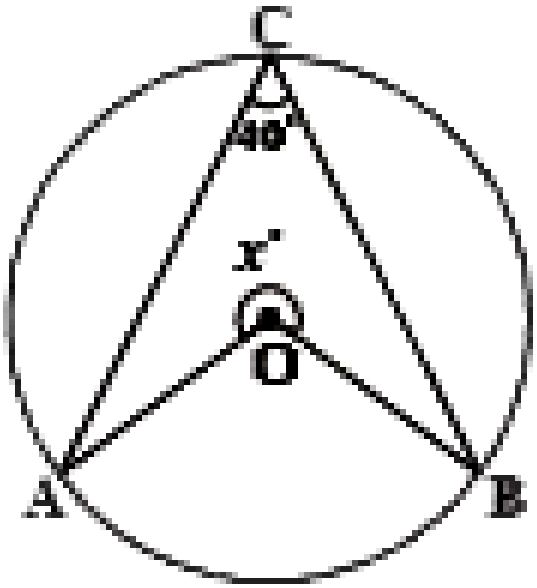
5. Find the value of x° in the adjacent figure.



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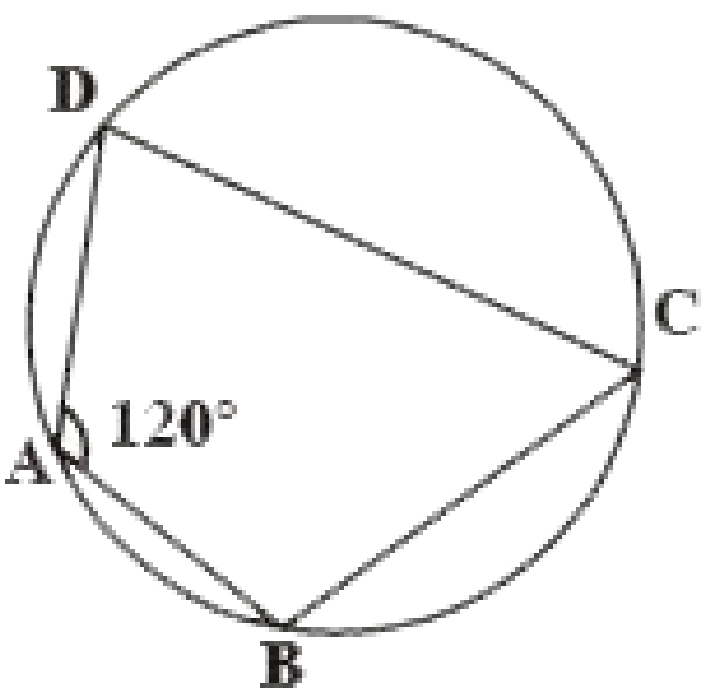
6. In the figure, $\angle A = 120^\circ$ then find $\angle C$?



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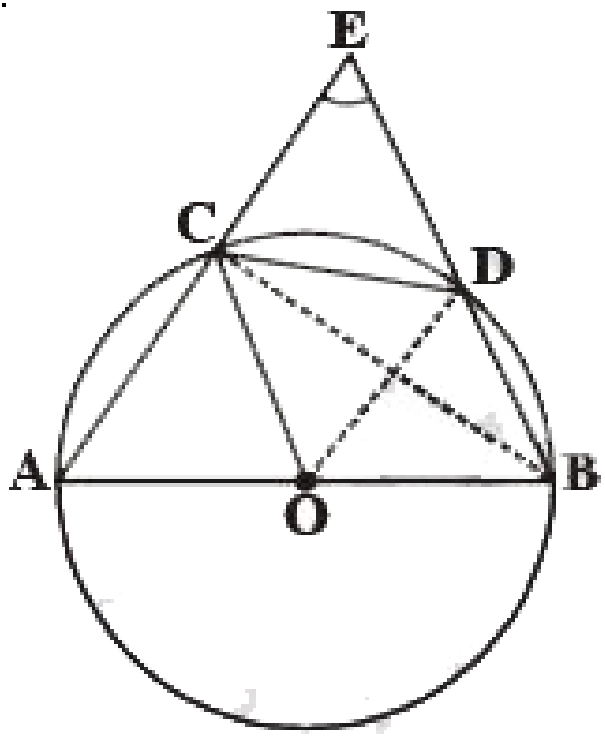
7. In figure, $\overline{AB}$ is a diameter of the circle, $\overline{CD}$ is a chord equal to the radius of the circle. $\overline{AC}$ and $\overline{BD}$ when extended intersect at a point E.

Prove that $\angle AEB = 60^\circ$.



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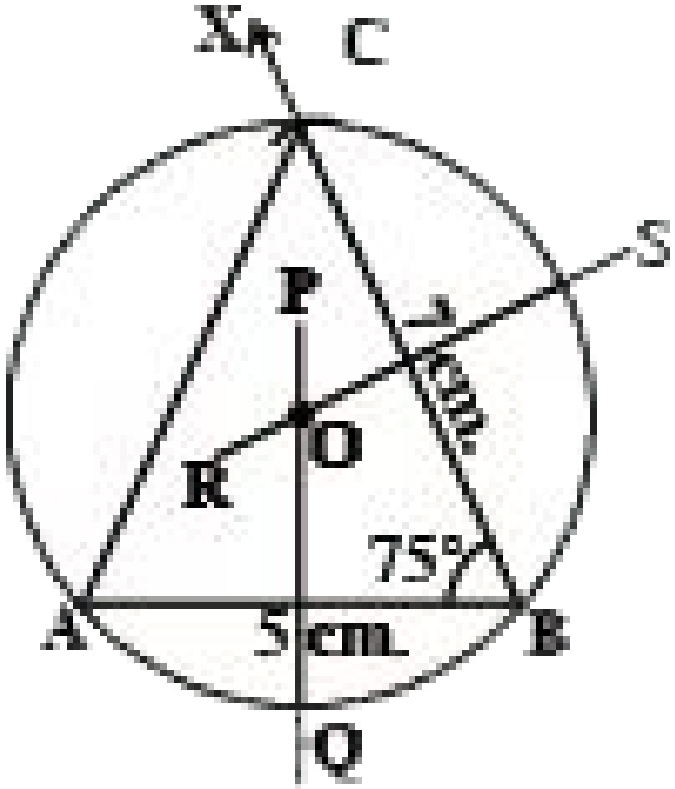
8. Construct a circumcircle of the triangle ABC where AB = 5 cm, $\angle B = 75^\circ$ and BC = 7 cm



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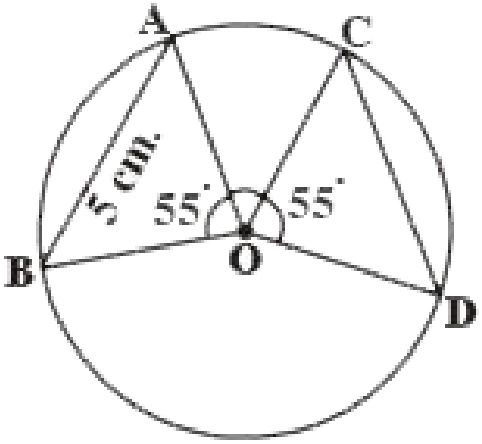
9. In the figure, O is the centre of the circle. Find the length of CD, if AB = 5 cm.



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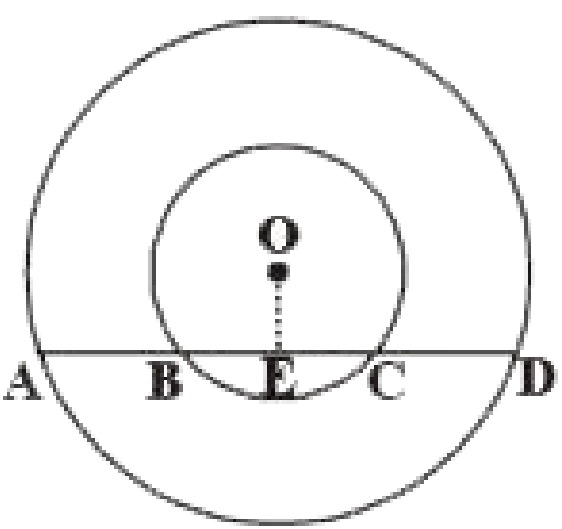
10. In the adjacent figure, there are two concentric circles with centre 'O'. Chord AD of the bigger circle intersects the smaller circle at B and C.

Show that AB = CD.



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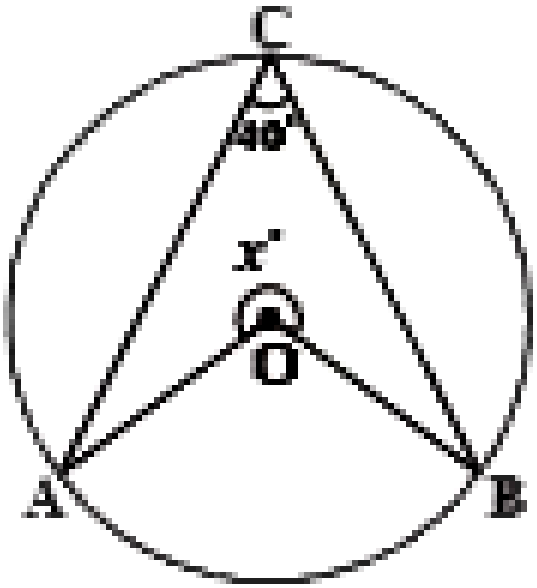
12. Find the value of x° in the adjacent figure.



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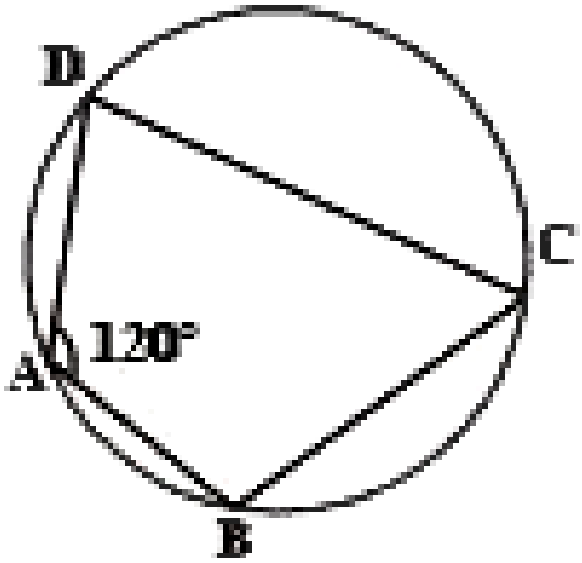
13. In the figure, $\angle A = 120^\circ$ then find $\angle C$?



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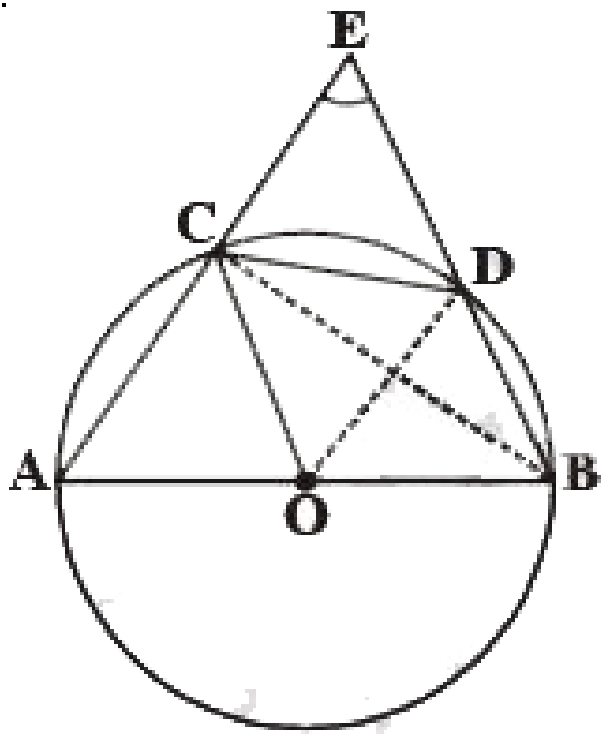
14. In figure, $\overline{AB}$ is a diameter of the circle, $\overline{CD}$ is a chord equal to the radius of the circle. $\overline{AC}$ and $\overline{BD}$ when extended intersect at a point E.

Prove that $\angle AEB = 6^\circ$.



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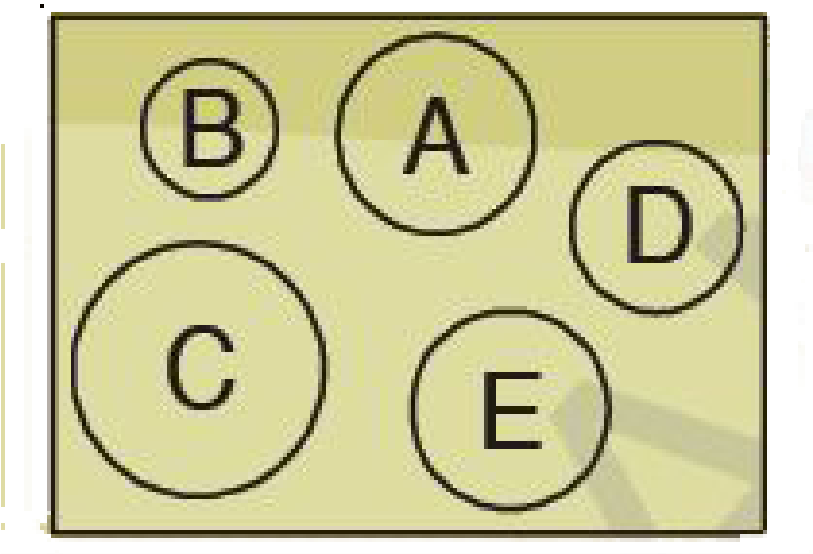
Do This

1. In the figure, which circles are congruent to the circle A?



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2. What measure of the circles make them congruent?

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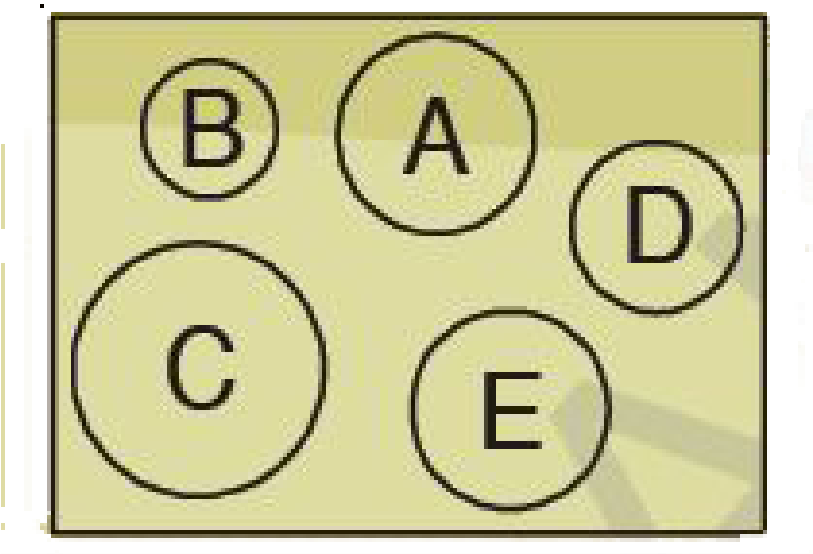
3. In the figure, which circles are congruent to the circle A?



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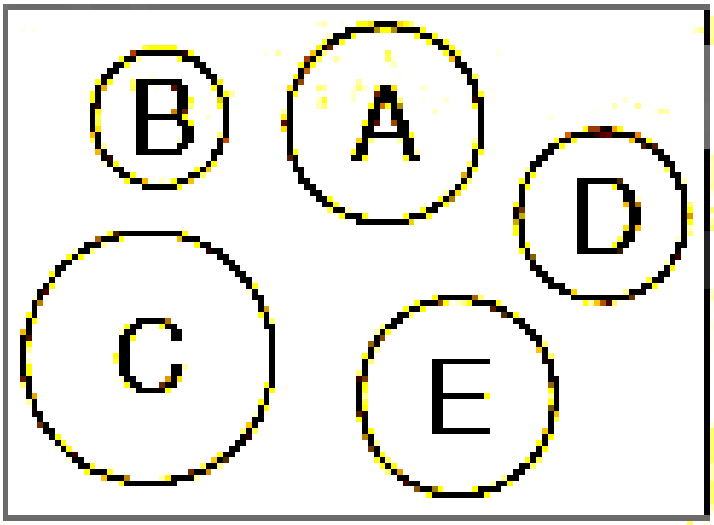
4. What measure of the circles make them congruent?



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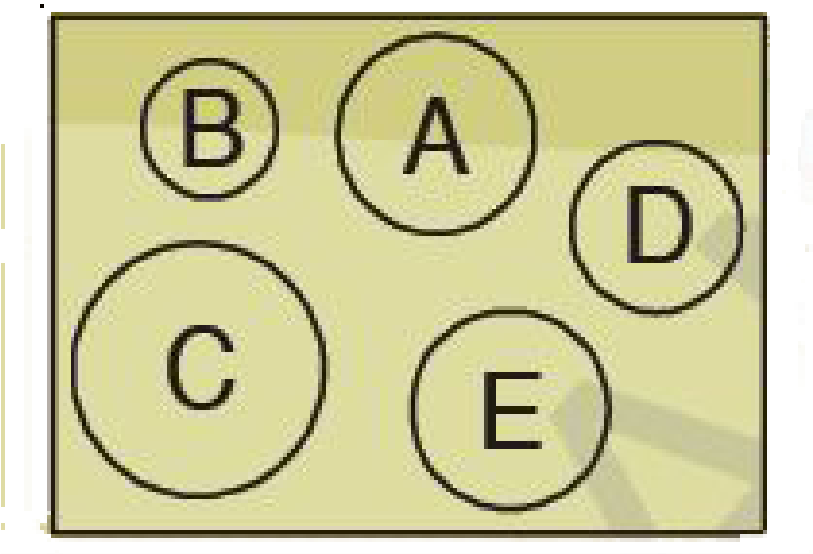
5. In the figure, which circles are congruent to the circle A?



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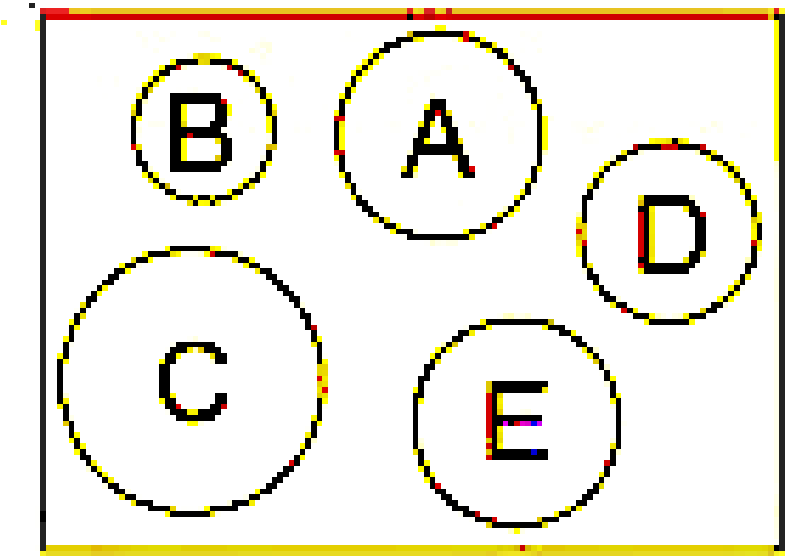

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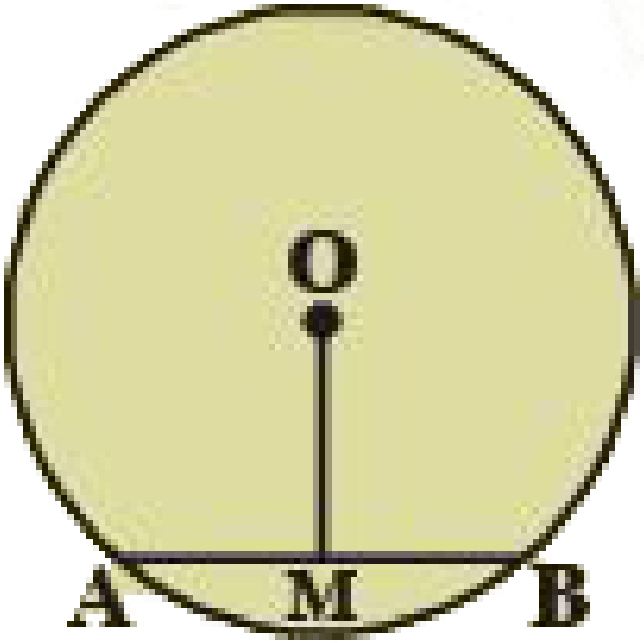
Try This

1. In a circle with centre 'O' . $\overline{AB}$ is a chord and 'M' is its midpoint . Now prove that $\angle(OM)$ is perpendicular to AB



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2. if three points are collinear , how many circles can be drawn through these points? Now, try to draw a circle passing through these three points.

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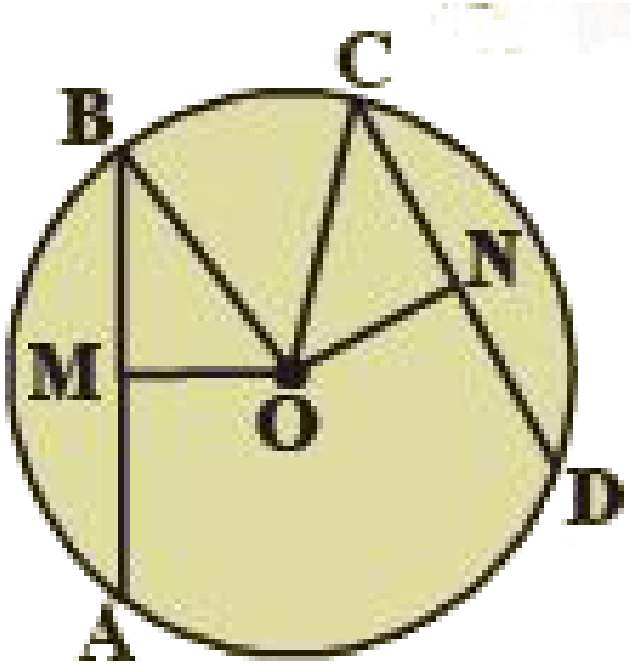
3. In the figure, O is the centre of the circle and AB = CD. OM is perpendicular on $\overline{AB}$ and $\overline{ON}$ is perpendicular on $\overline{CD}$. Then prove that OM = ON.



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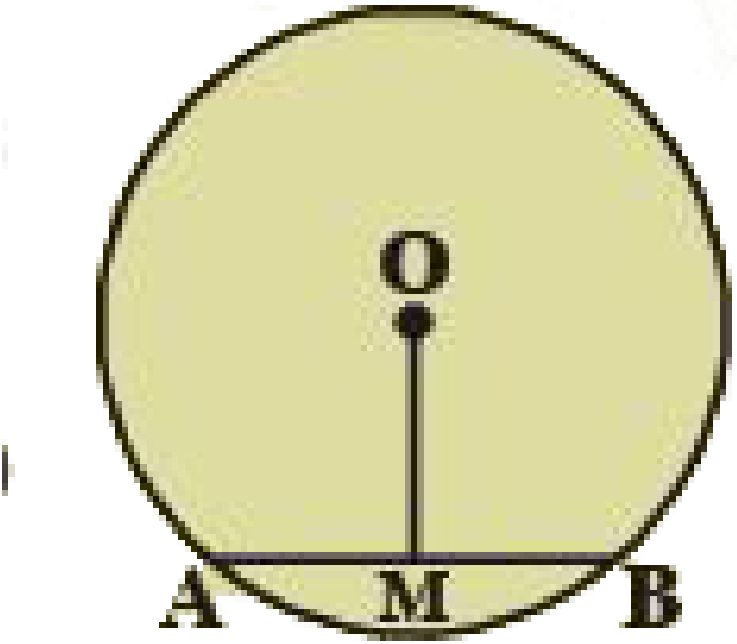

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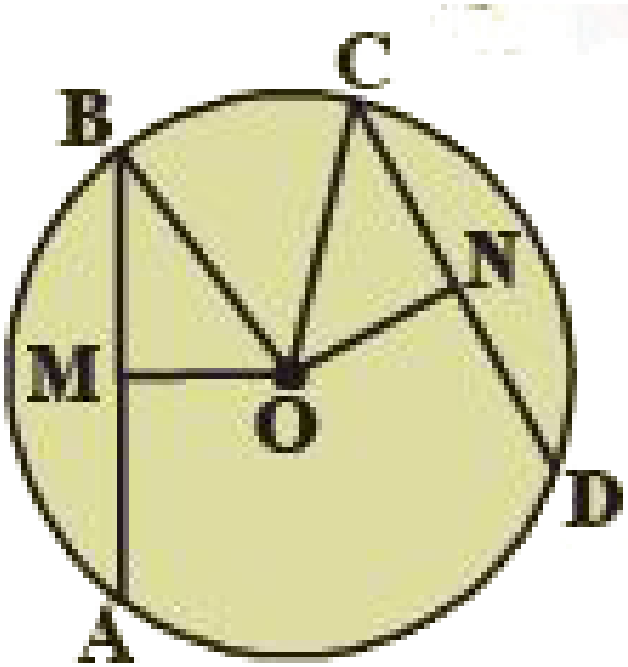
5. In the figure, O is the centre of the circle and AB = CD. OM is perpendicular on $\overline{AB}$ and $\overline{ON}$ is perpendicular on $\overline{CD}$. Then prove that

OM = ON.



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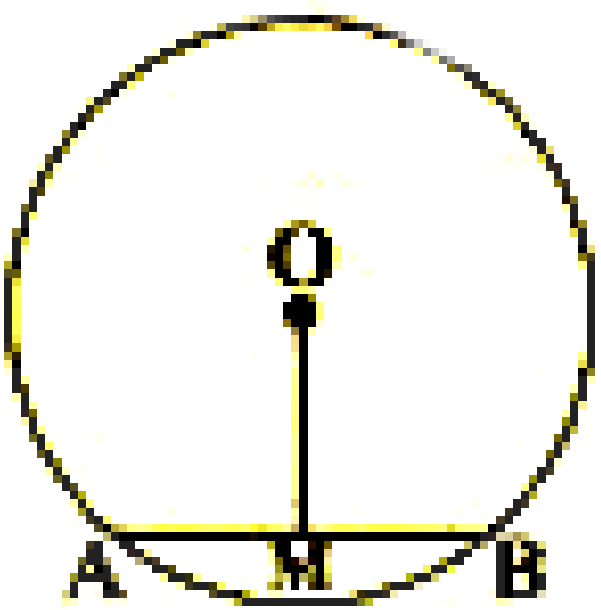
6. In a circle with centre 'O'. $\overline{AB}$ is chord and 'M' is its midpoint. Now prove that $\overline{OM}$ is perpendicular to AB.

(Hint : Join OA and OB consider triangles OAM and OBM)



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7. if three points are collinear , how many circles can be drawn through these points? Now, try to draw a circle passing through these three points.

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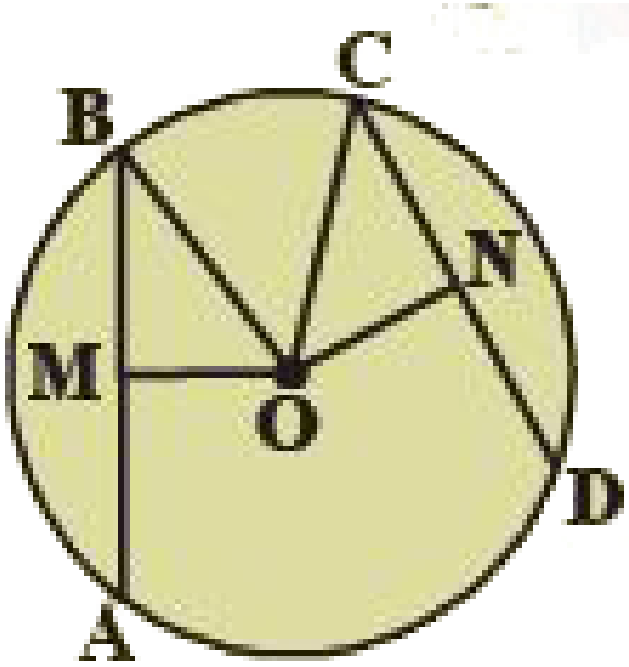
8. In the figure, O is the centre of the circle and AB = CD. OM is perpendicular on $\overline{AB}$ and $\overline{ON}$ is perpendicular on $\overline{CD}$. Then prove that OM = ON.



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9. Represent diagramatically 'chords of equal length are at equal distance from the centre of the circle'.

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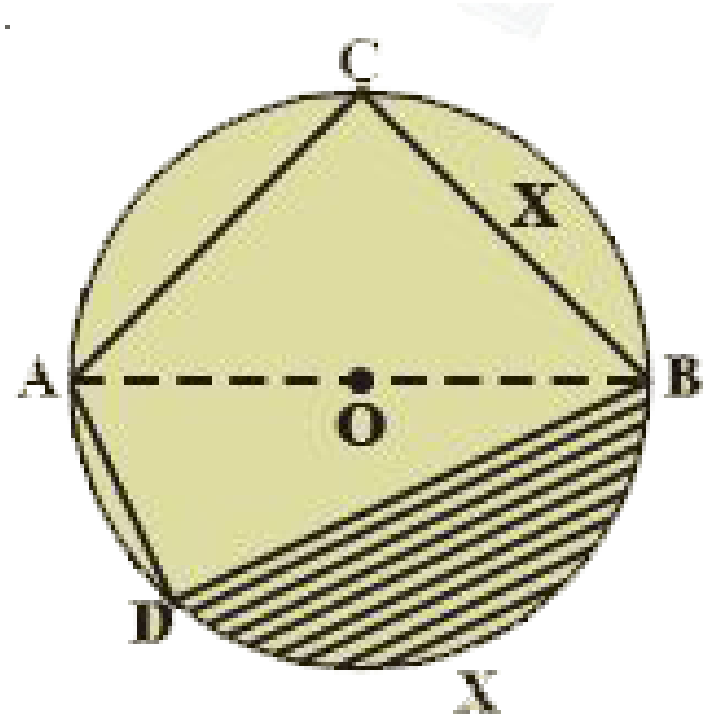
Exercise 12 1

1. Name the following parts from the adjacent figure where 'O' is the centre of the circle



$(i)\overline{AO}(ii)\overline{AB}(iii) \frown (BC)(iv)\overline{AC}(v) \frown (DCB)(vi) \frown (ACB)(vi)\overline{AD}$

(viii) shadedregion

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2. State true or false .

A circle divides the plane on which it lies into three parts.

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3. State true or false .

The region enclosed by a chord and the minor arc is minor segment

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4. State true or false .

The region enclosed by a chord and the major arc is major segment

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5. State true or false .

A diameter divides the circle into two unequal parts.

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6. State true or false .

A sector is the area enclosed by two radii and a chord

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7. State true or false .

The longest of all chords of a circle is called a diameter.

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8. State true or false .

The mid point of any diameter of a circle is the centre.

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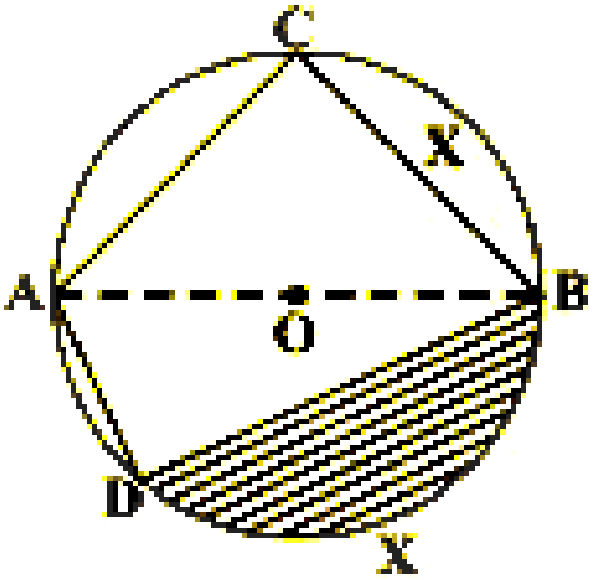
9. Name the following parts from the adjacent figure where 'O' is the centre of the circle.

$\overline{AO}$



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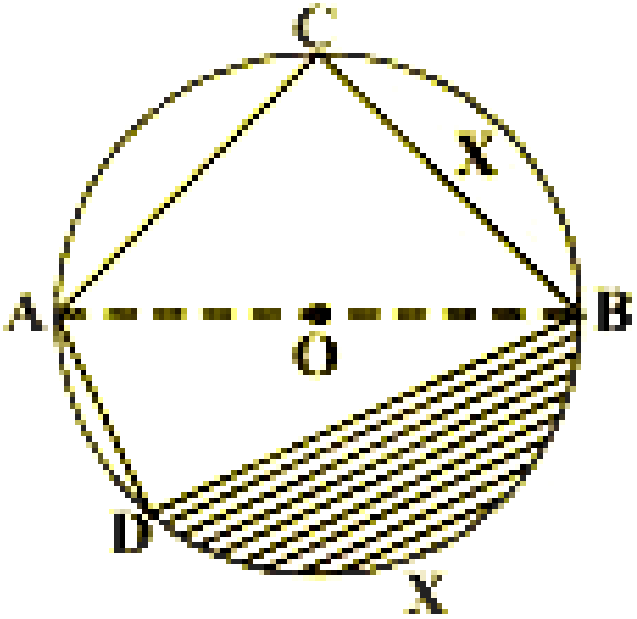
10. Name the following parts from the adjacent figure where 'O' is the centre of the circle.

$\overline{AB}$



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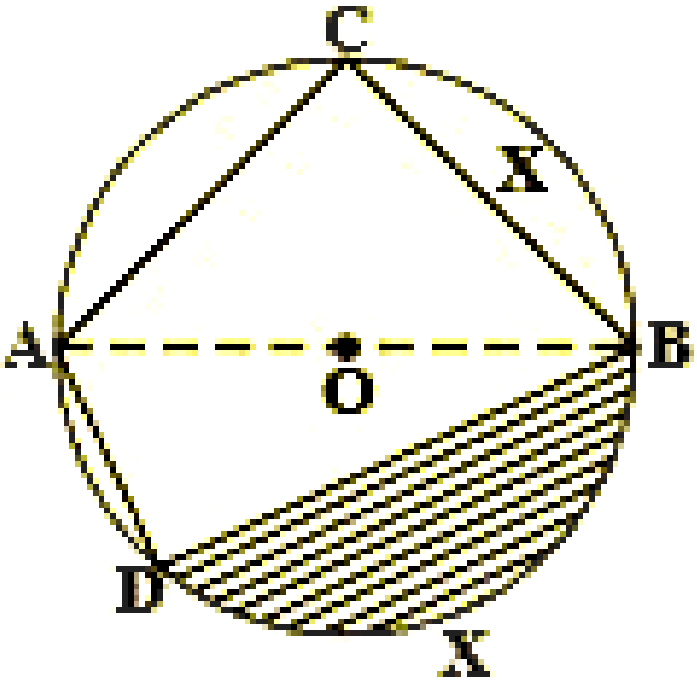
11. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{BC}$



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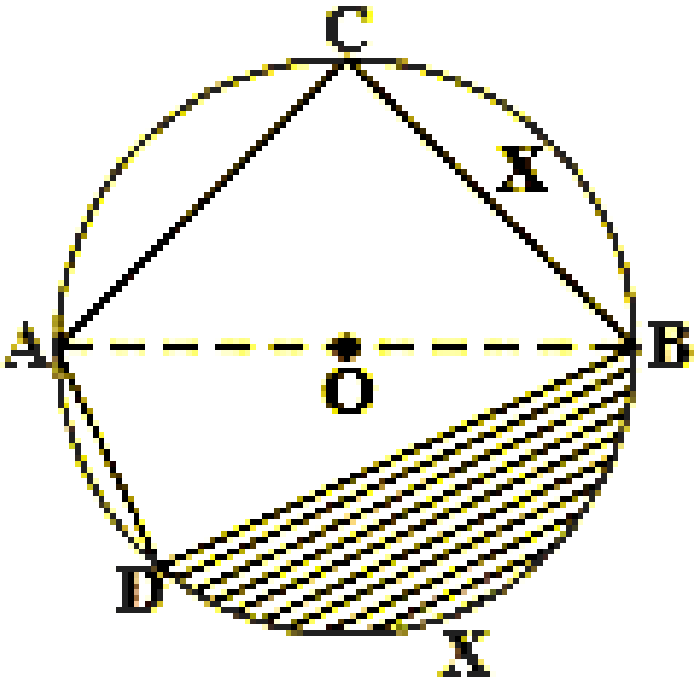
12. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{AC}$



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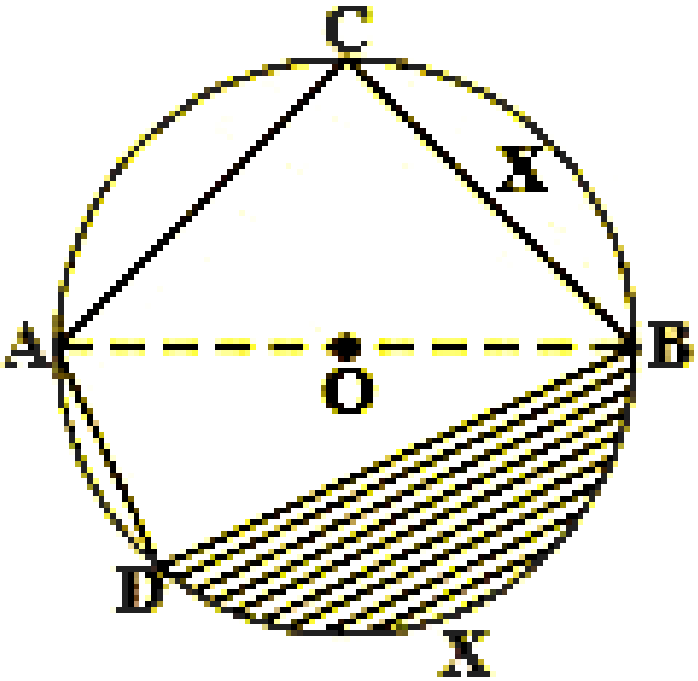
13. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{DCB}$



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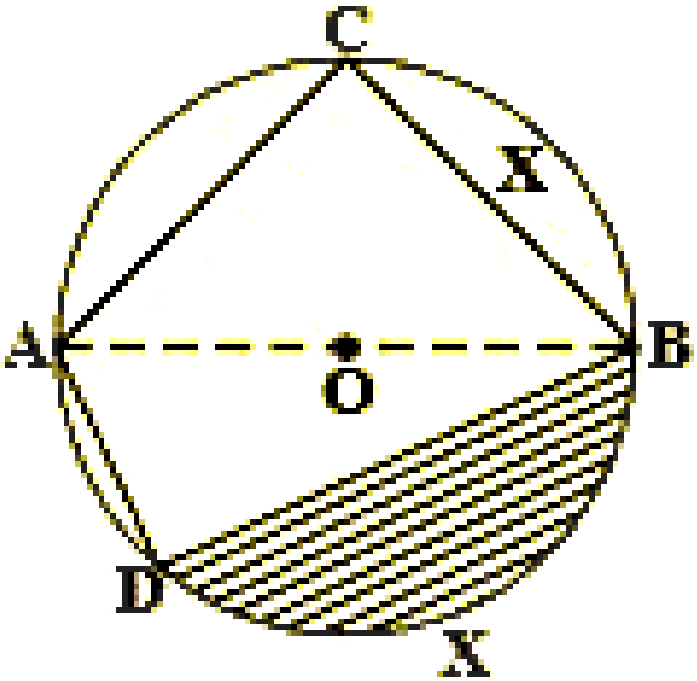
14. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{ACB}$



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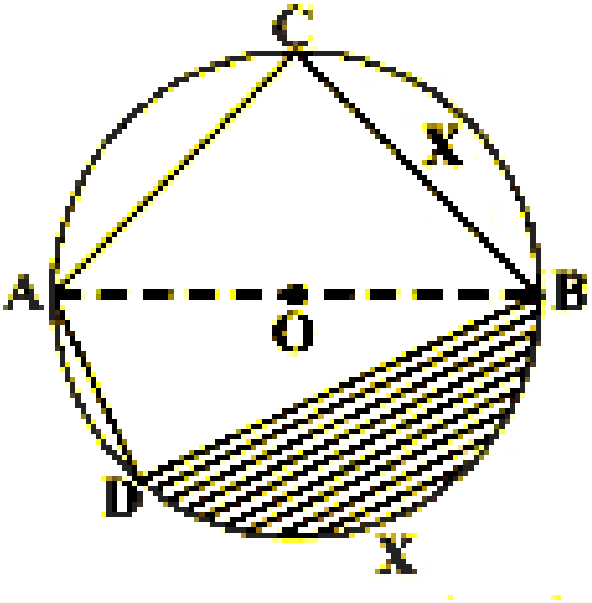
15. Name the following parts from the adjacent figure where 'O' is the centre of the circle.

$\overline{AO}$



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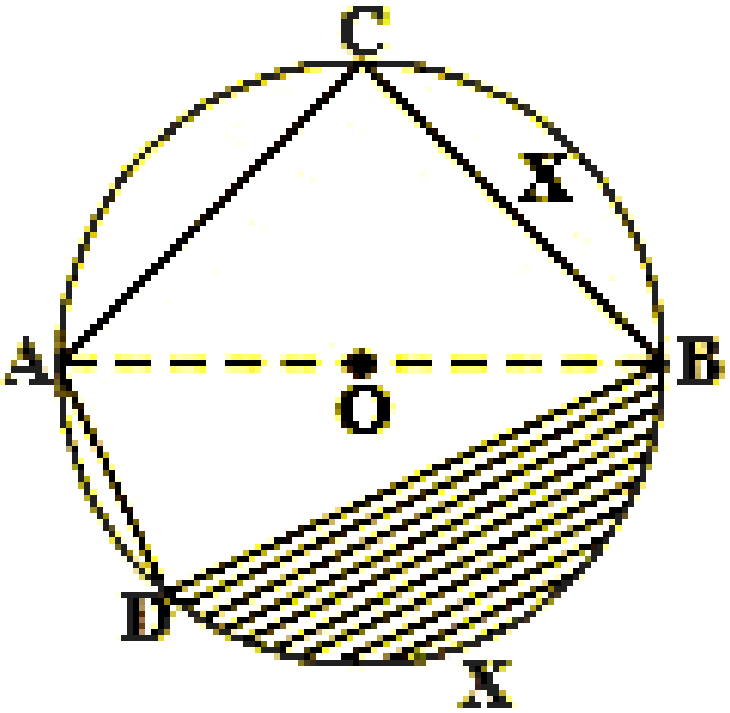
16. Name the following parts from the adjacent figure where 'O' is the centre of circle.

shaded region



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17. State true or false .

A circle divides the plane on which it lies into three parts.

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18. State true or false .

The region enclosed by a chord and the minor arc is minor segment

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19. State true or false .

The region enclosed by a chord and the major arc is major segment

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20. State true or false .

A diameter divides the circle into two unequal parts.

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21. State true or false .

A sector is the area enclosed by two radii and a chord

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22. State true or false .

The longest of all chords of a circle is called a diameter.

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23. State true or false .

The mid point of any diameter of a circle is the centre.

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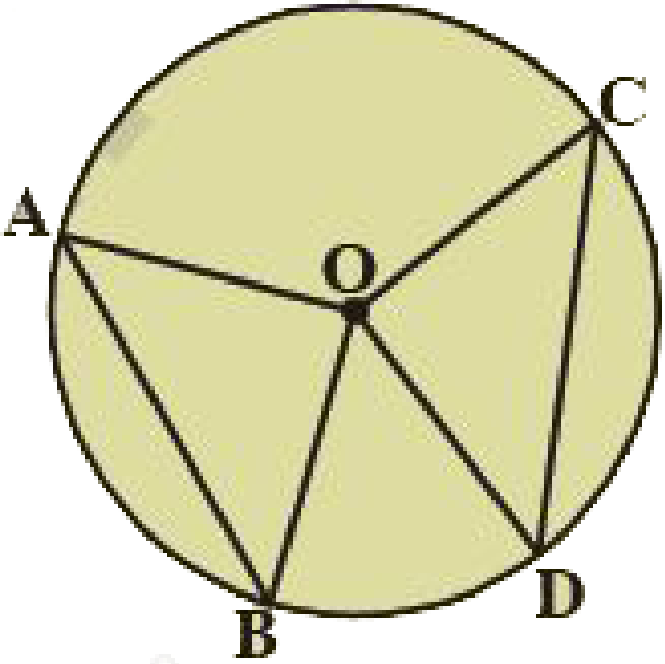
Exercise 12 2

1. In the figure , if AB = CD and $\angle AOB - 90^\circ$ find $\angle COD$



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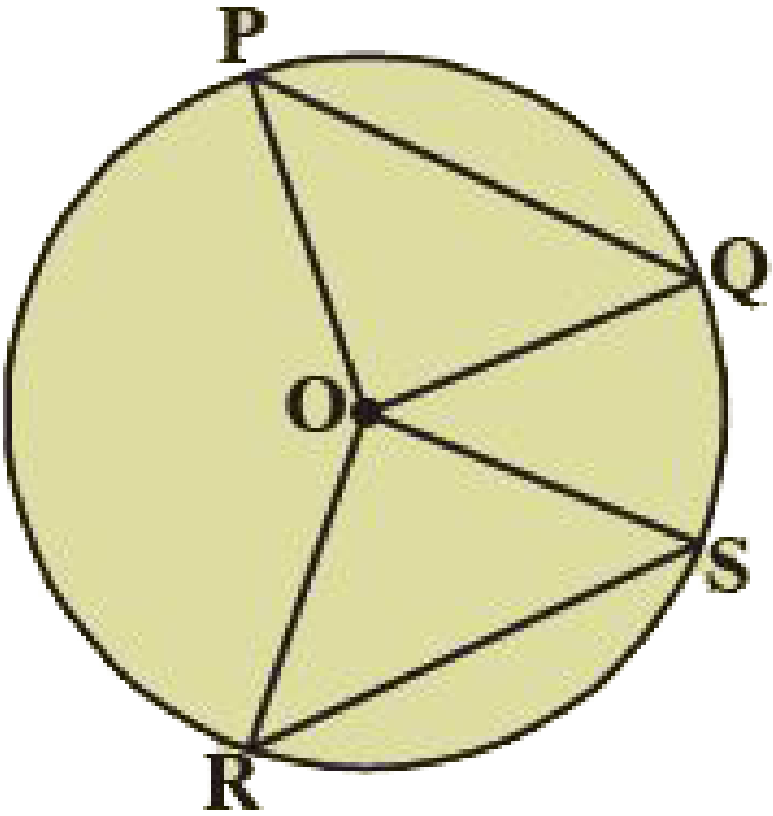
2. In the figure , PQ = RS and $\angle ORS = 48^\circ$. Find $\angle OPQ$ and $\angle ROS$

.



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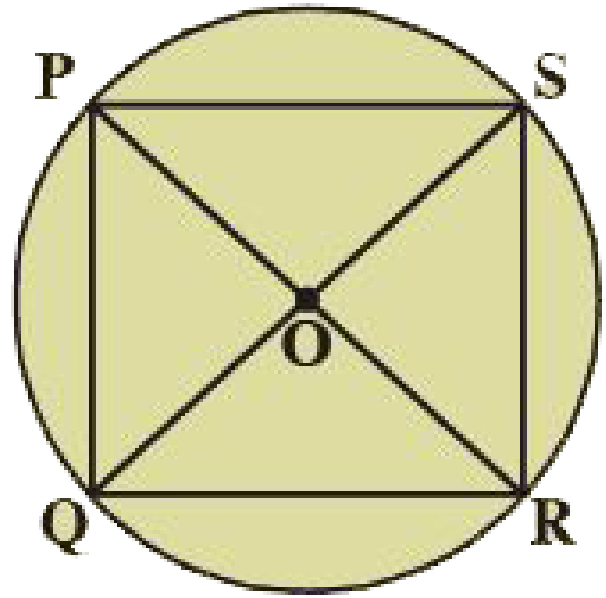
3. In the figure PR and QS are two diameters. Is PQ = RS?



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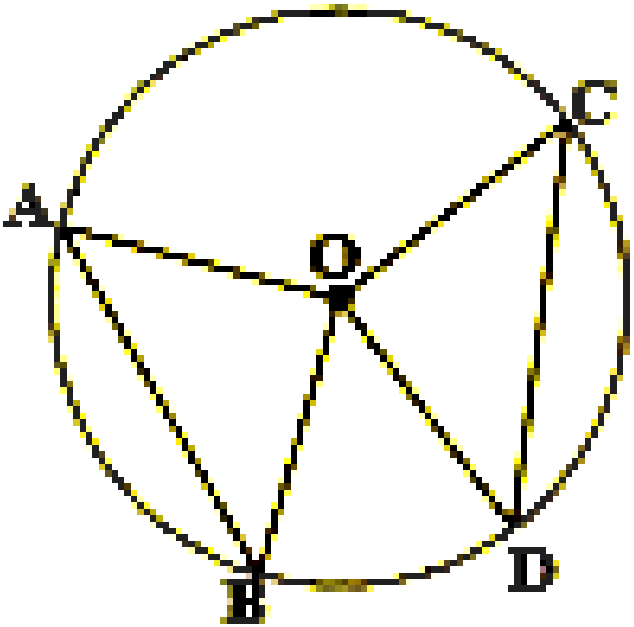
4. In the figure, if AB = CD and $\angle AOB = 90^\circ$ find $\angle COD$



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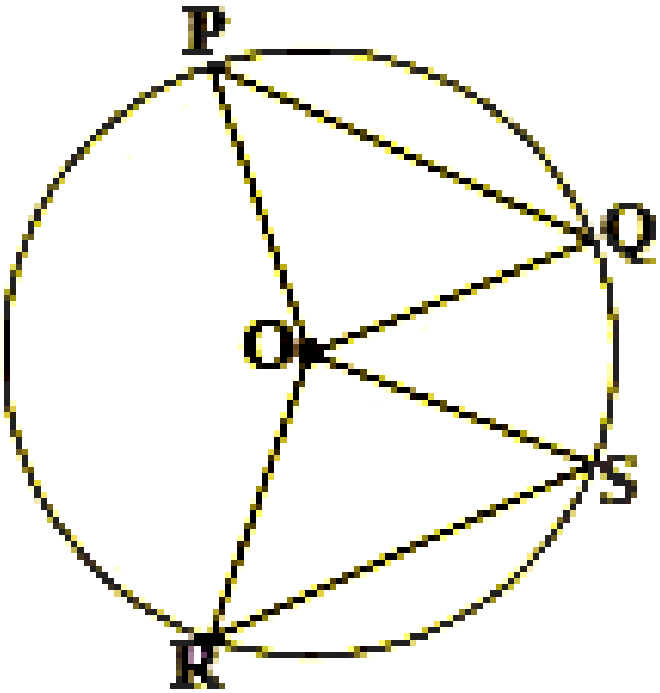

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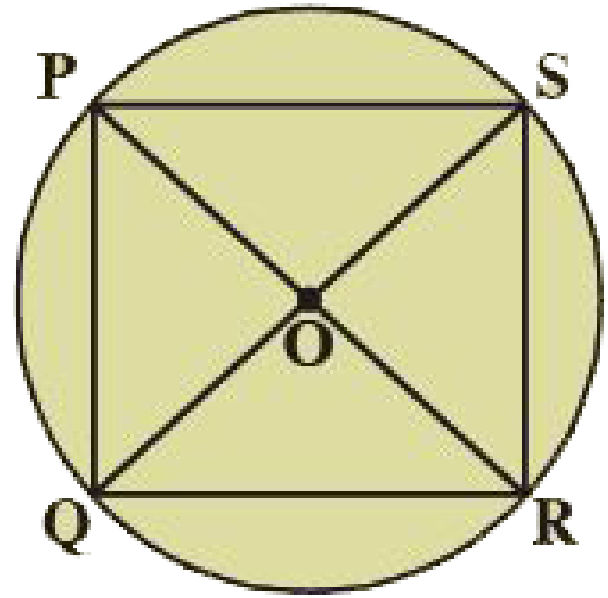
6. In the figure PR and QS are two diameters. Is PQ = RS?



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Exercise 12 3

1. Draw the following triangles and construct circumcircles for them.

In ΔABC, $AB = 6cm$, $BC = 7cm$ and $\angle A = 60^\circ$

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2. Draw the following triangles and construct circumcircles for them.

in $\Delta PQR, PQ = 5cm, QR = 6cm$ and $RP = 8.2cm$

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3. Draw the following triangles and construct circumcircles for them.

In $\Delta XYZ, XY = 4.8cm, \angle X = 60^\circ$ and $\angle Y = 70\& \circ$

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4. Draw two circles passing through A, B where AB = 5.4cm

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5. Draw the following triangles and construct circumcircles for them : In ΔABC, AB = 6 cm, BC = 7 cm and $\angle A = 60^\circ$.

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6. Draw the following triangles and construct circumcircles for them: In ΔPQR , PQ = 5 cm , QR = 6 cm and RP= 8.2cm.

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7. Draw the following triangles and construct circumcircles for them: In $\Delta XYZ, XY = 4.8cm$angleX = 60^@ and angleY = 70^@`.

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8. Draw two circles passing through A, B where AB = 5.4cm

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9. If two circles intersect at two points , then prove that their centres lie on the perpendicular bisector of the common chord.

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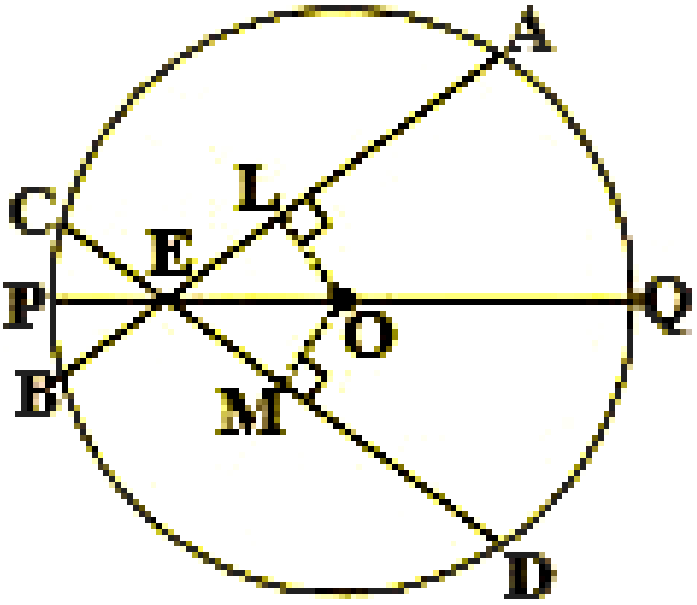
10. If two intersecting chords of a circle make equal angles with diameter passing through their point of intersection, prove that the

chords are equal.



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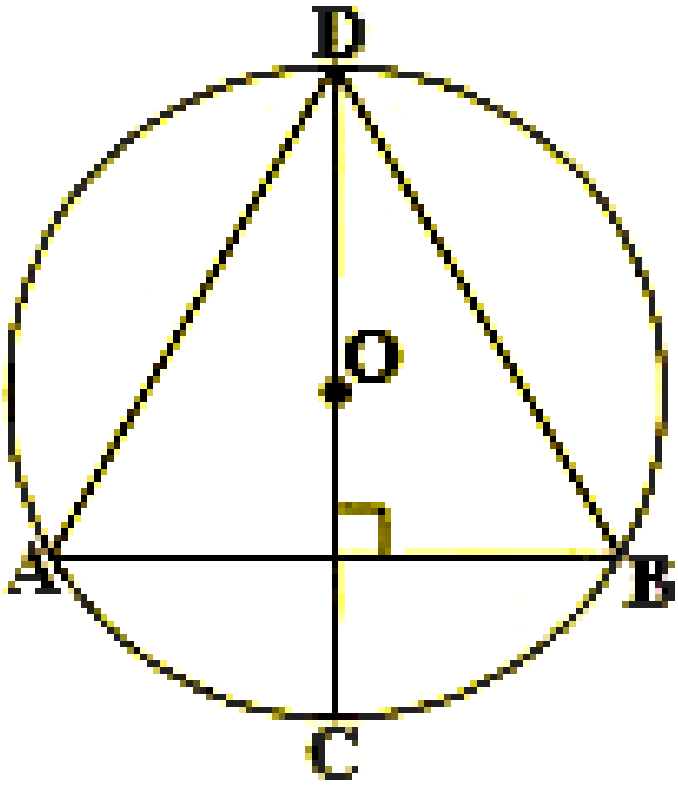
11. In the adjacent figure, AB is a chord of circle with centre O. CD is the diameter perpendicualr to AB. Show that AD = BD.



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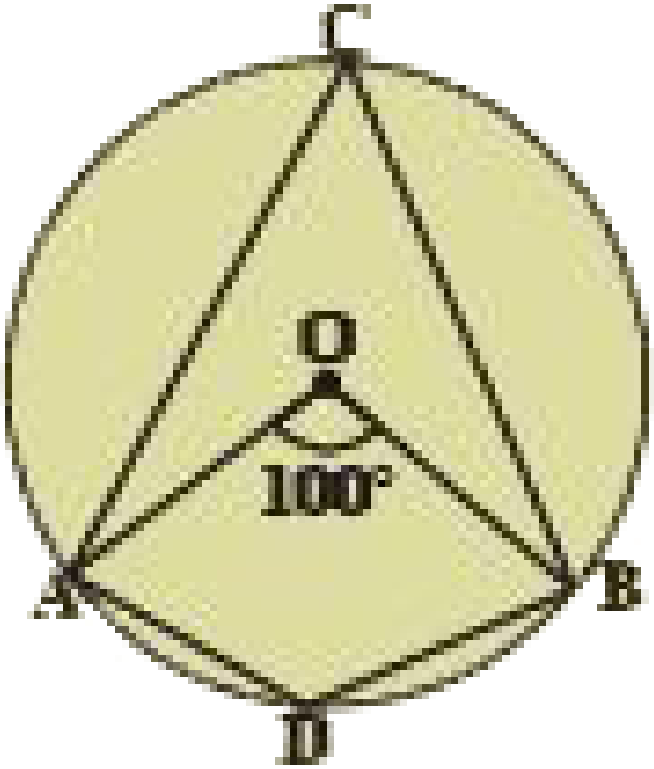
Exercise 12 4

1. In the figure 'O' is the centre of the circle

$\angle AOB = 100^\circ$ find $\angle ADB$



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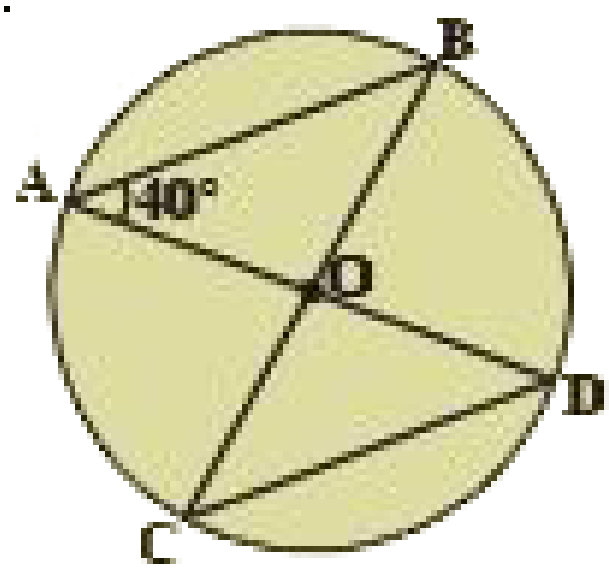
2. In the figure $\angle BAD = 40^\circ$ then find $\angle BCD$



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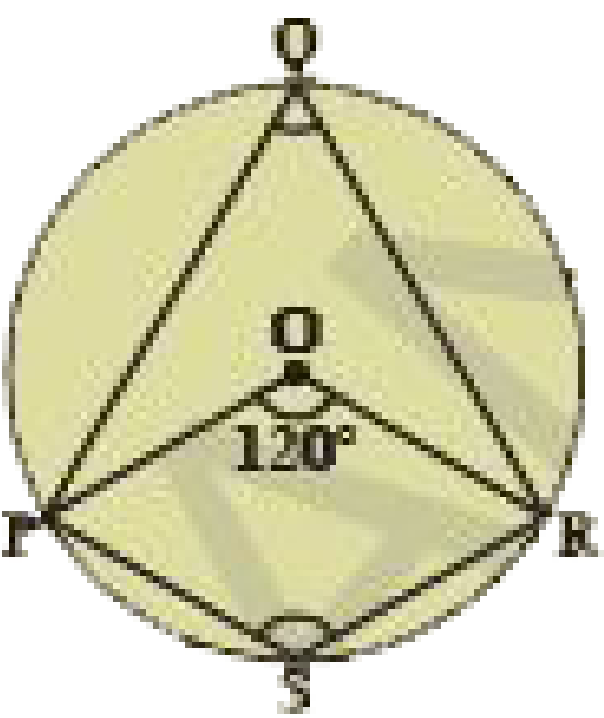
3. In the figure , O is the centre of the circle and $\angle POR = 120^\circ$. Find $\angle PQR$ and $\angle PSR$



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4. If a parallelogram is cyclic, then it is a rectangle. Justify.

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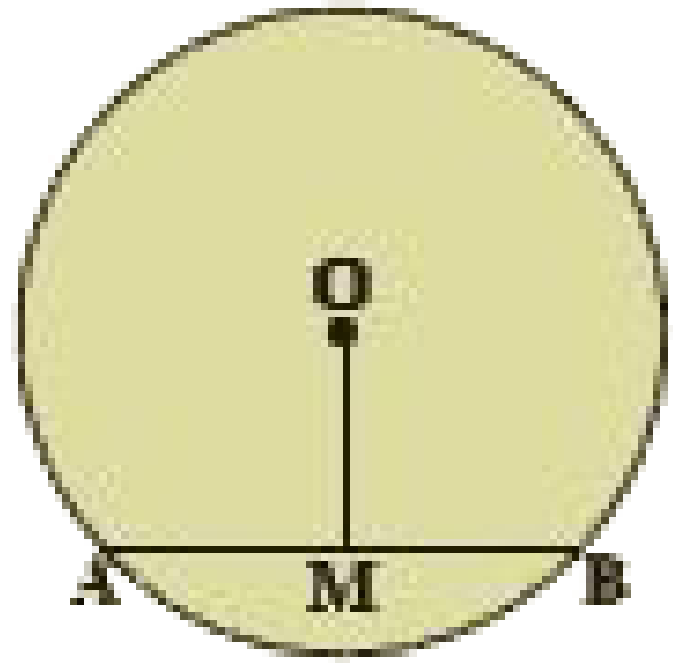
5. In the figure, 'O' is the centre of the circle. OM = 3cm and AB = 8cm.

Find the radius of the circle



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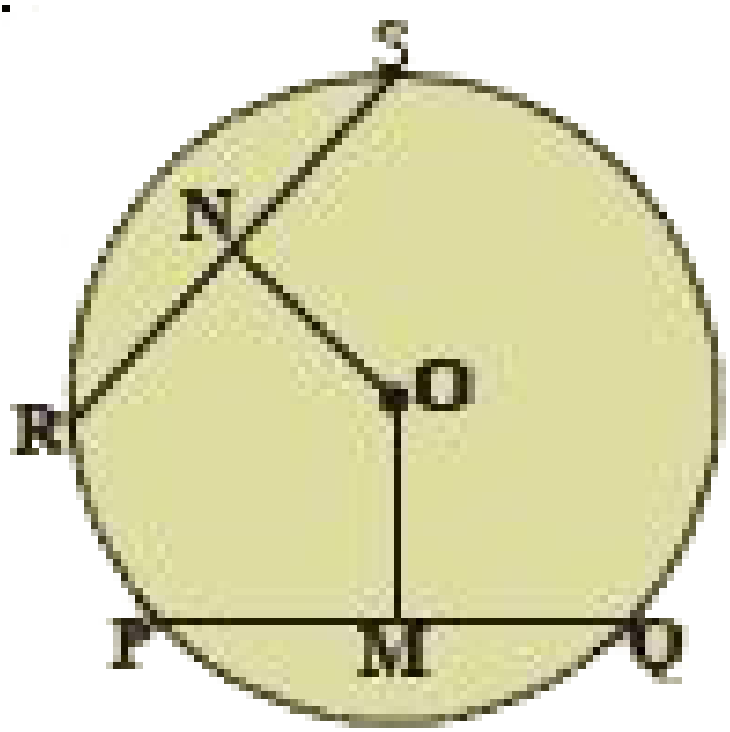
6. In the figure, 'O' is the centre of the circle and OM, ON are the perpendiculars from the centre to the chords PQ and RS. If OM = ON

and PQ = 6cm. Find RS



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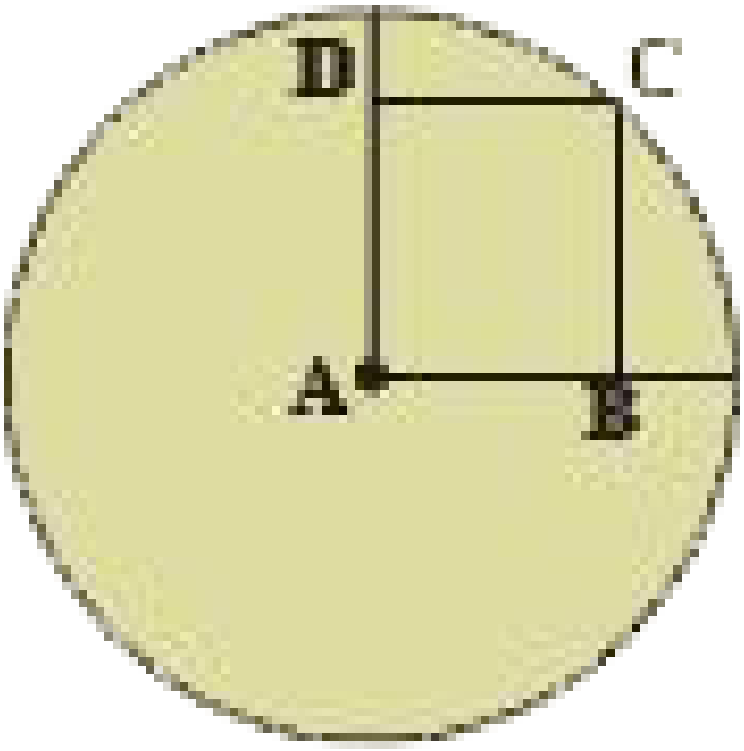
7. A is the centre of the circle and ABCD is a square. If BD = 4cm then find the radius of the circle



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8. Draw a circle with any radius and then draw two chords equidistant from the centre

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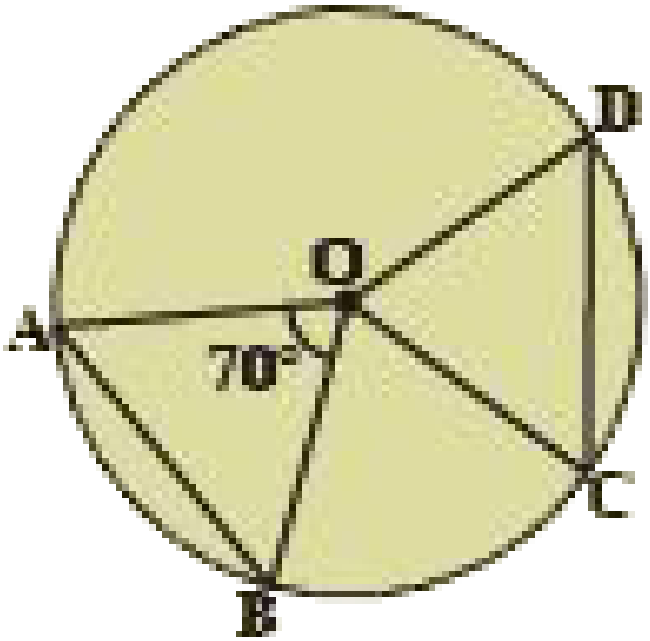
9. In the given figure 'O' is the centre of the circle and AB, CD are equal chords. If $\angle AOB = 70^\circ$. Find the angles of the ΔOCD



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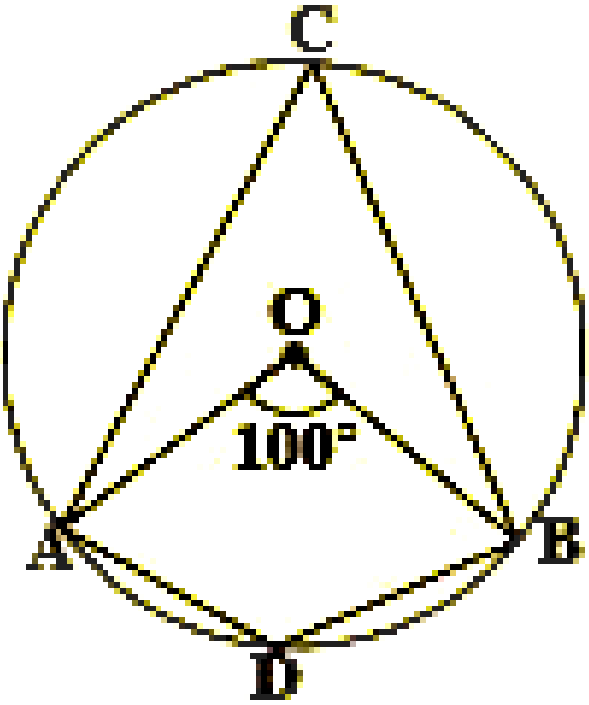
10. In the figure, 'O' is the centre of the circle.

$\angle AOB = 100^\circ$ find $\angle ADB$.



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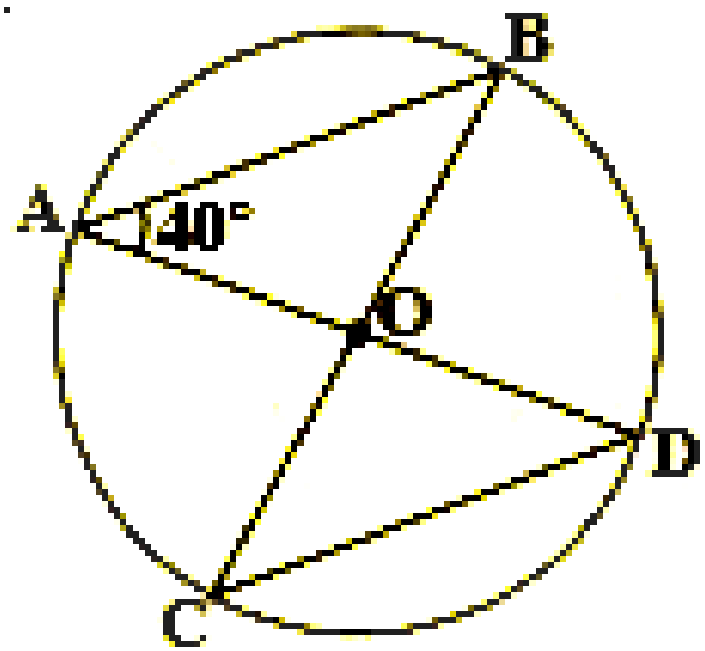
11. In the figure, $\angle BAD = 40^\circ$ then find $\angle BCD$.



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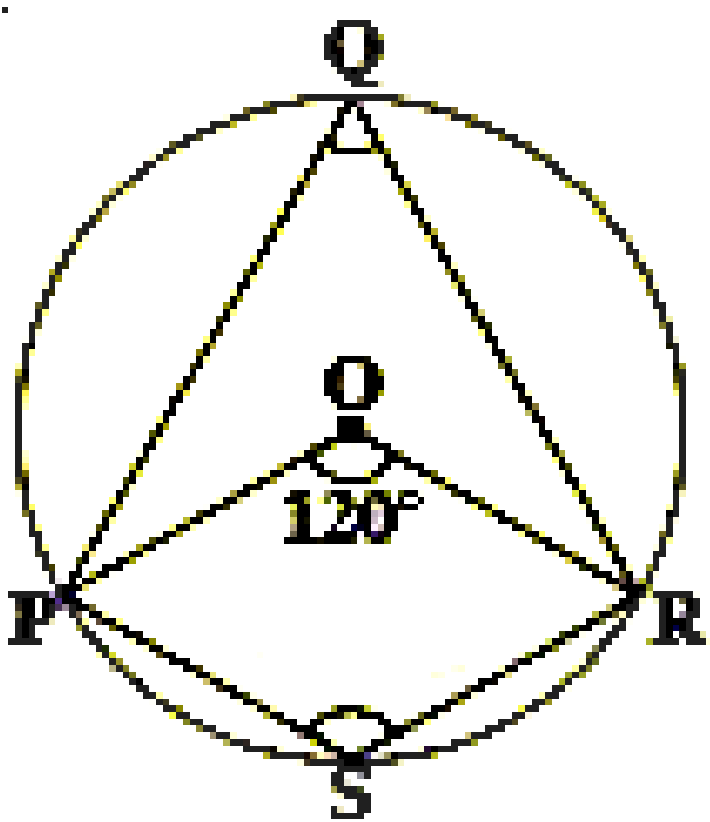
12. In the figure, O is the centre of the circle and $\angle POR = 120^\circ$. Find $\angle PQR$ and $\angle PSR$



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13. If a parallelogram is cyclic, then it is a rectangle. Justify.

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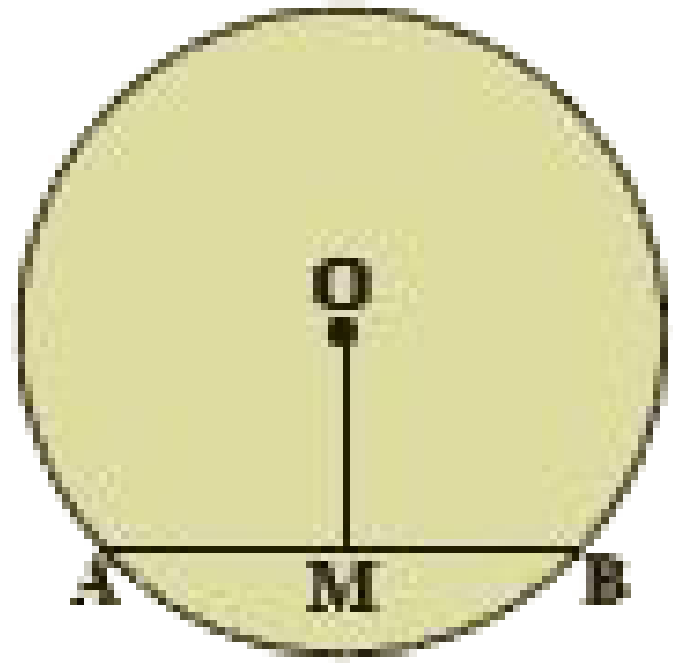
14. In the figure, 'O' is the centre of the circle. OM = 3cm and AB = 8cm.

Find the radius of the circle



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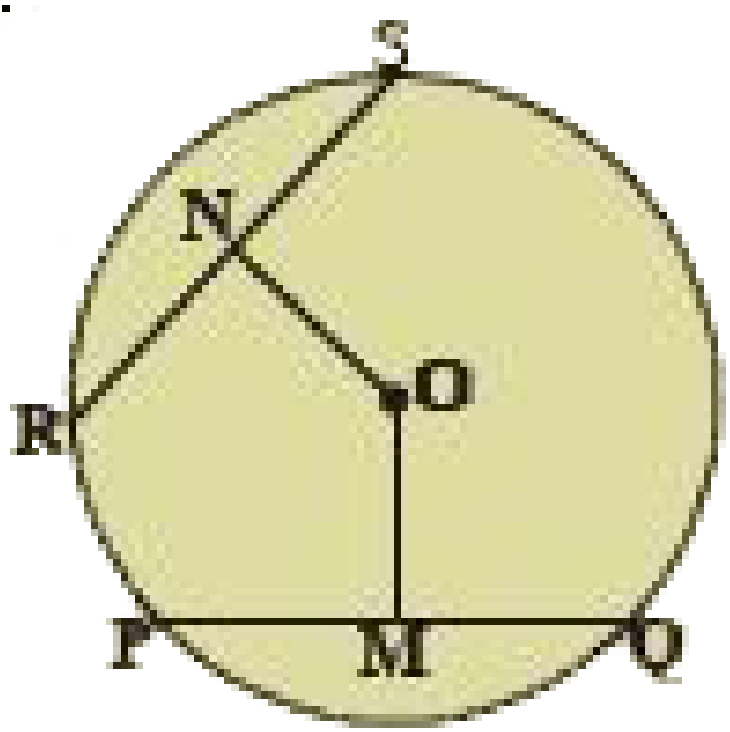
15. In the figure, 'O' is the centre of the circle and OM, ON are the perpendiculars from the centre to the chords PQ and RS. If OM = ON

and PQ = 6cm. Find RS



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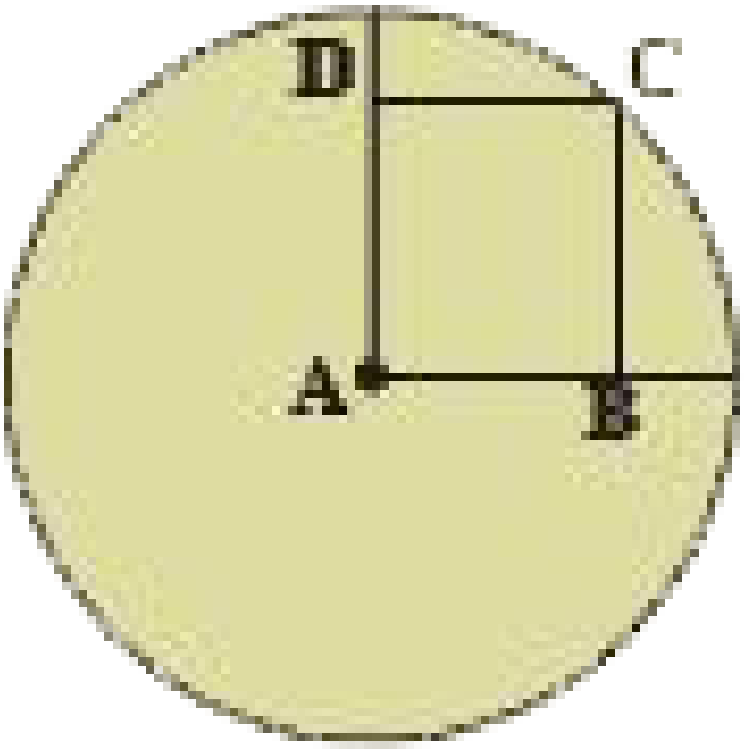
16. A is the centre of the circle and ABCD is a square. If BD = 4cm then find the radius of the circle



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17. Draw a circle with any radius and then draw two chords equidistant from the centre.

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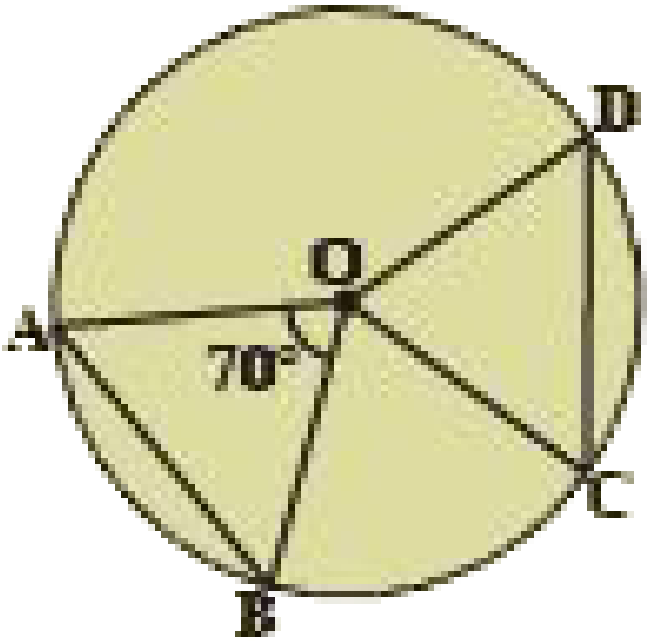
18. In the given figure 'O' is the centre of the circle and AB, CD are equal chords. If $\angle AOB = 70^\circ$. Find the angles of the ΔOCD



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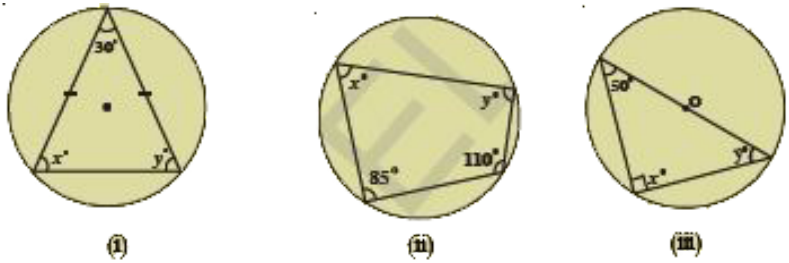
Exercise 12 5

1. Find the values of x and y in the figures given below



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2. Given that the vertices A, B, C of a quadrilateral ABCD lie on a circle. Also $\angle A + \angle C = 180^\circ$, then prove that the vertex D also lie on the same circle.

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3. Prove that a cyclic rhombus is a square

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4. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : Rectangle.

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5. (f) A quadrilateral PQRS with PR as diameter.

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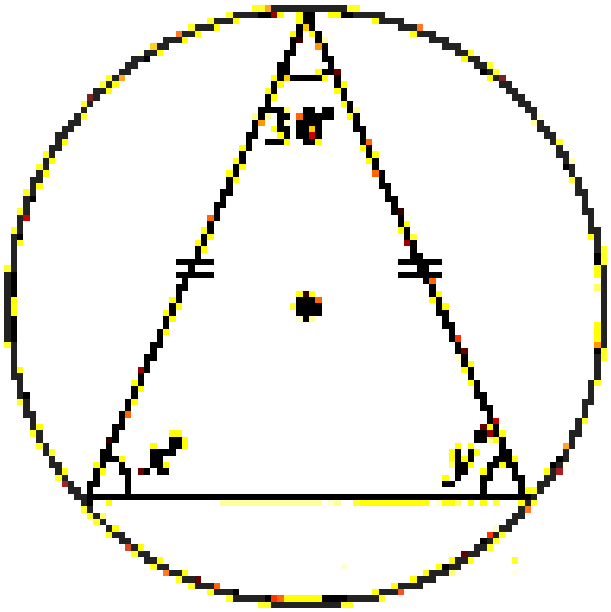
6. Find the values of x and y in the figures given below.



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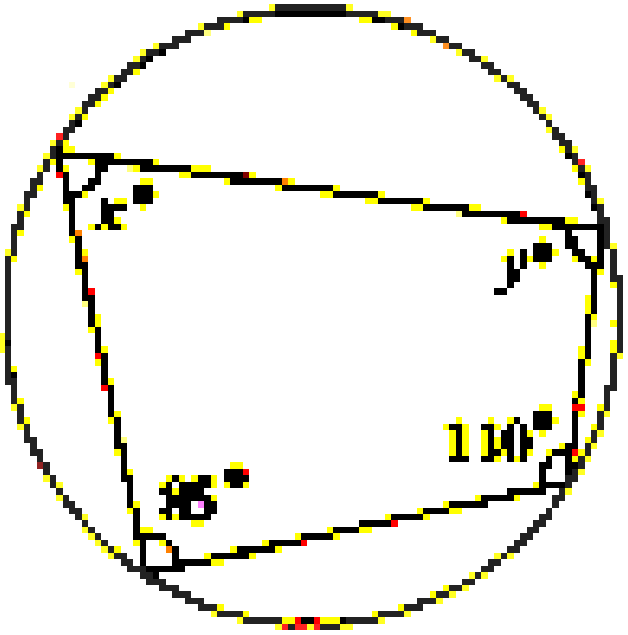
7. Find the values of x and y in the figures given below.



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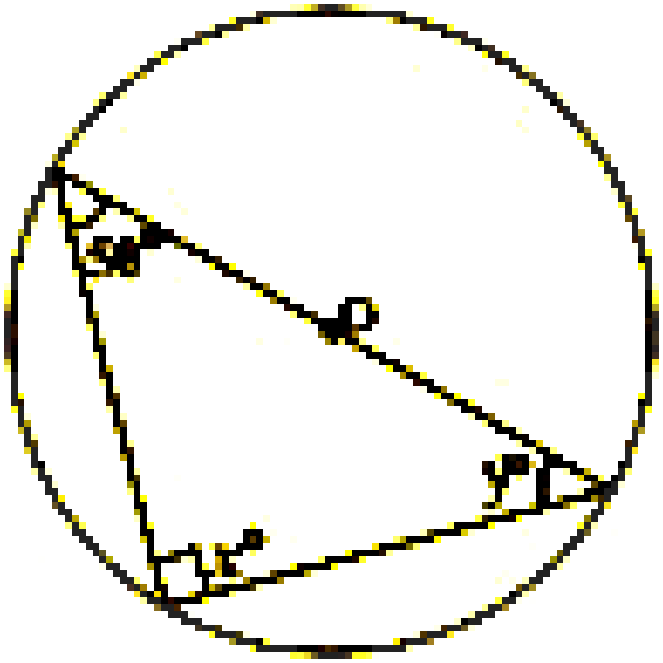
8. Find the values of x and y in the figures given below.



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9. Given that the vertices A, B, C of a quadrilateral ABCD lie on a circle. Also $\angle A + \angle C = 180^\circ$, then prove that the vertex D also lie on the same circle.

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10. Prove that a cyclic rhombus is a square

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11. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : Rectangle.

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12. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible :Trapezium.

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13. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : Obtuse triangle.

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14. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed, write not possible. Non-rectangular parallelogram

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15. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed, write not possible. Accute isosceles triangle

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16. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : A quadrilateral PQRS with $\overline{PR}$ as diameter.

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Exercise 12 1

1. Name the following parts from the given figure where 'O' is a centre of the circle. $\overline{AO}$,

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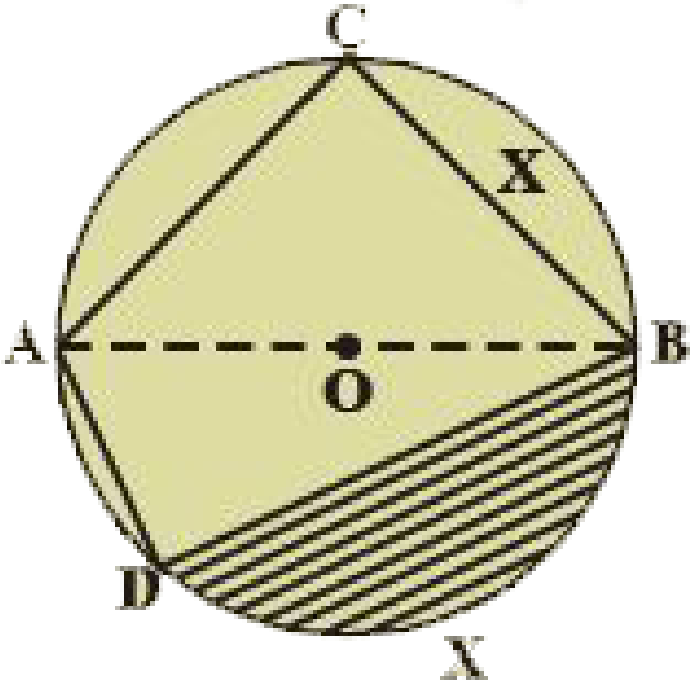
2. Name the following parts from the adjacent figure where 'O' is the centre of the circle



$(i)\overline{AO}(ii)\overline{AB}(iii) \frown (BC)(iv)\overline{AC}(v) \frown (DCB)(vi) \frown (ACB)(vi)\overline{AD}$

(viii) shadedregion

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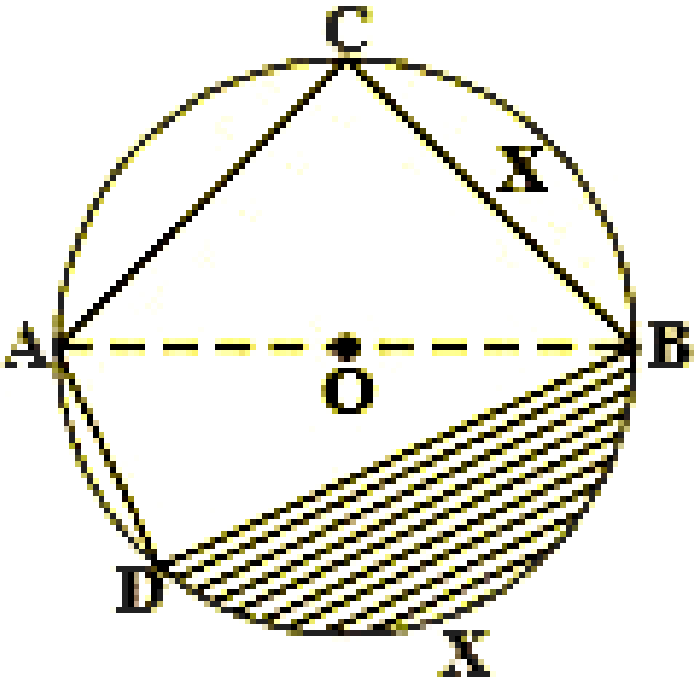
3. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{BC}$



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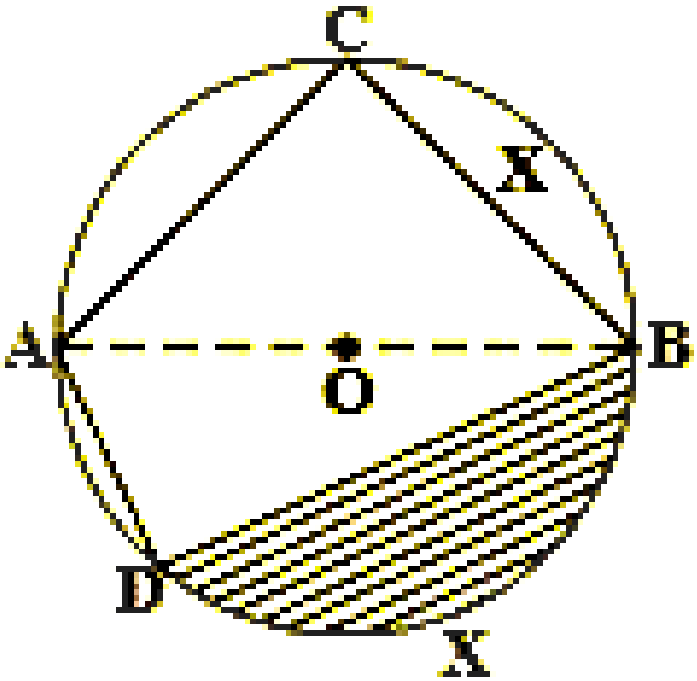
4. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{AC}$



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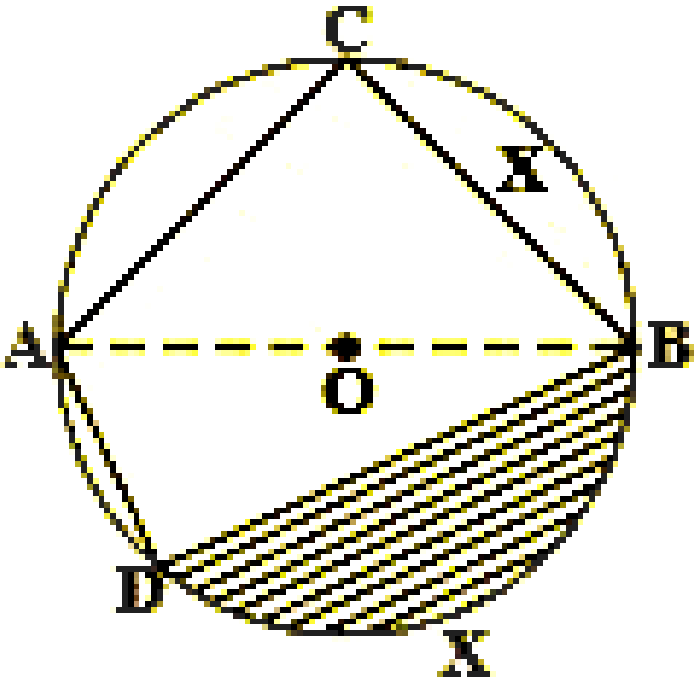
5. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{DCB}$



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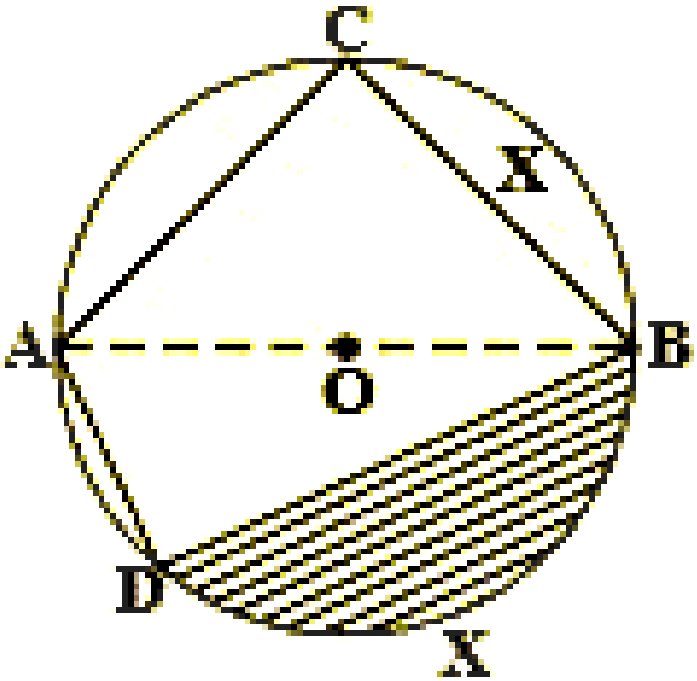
6. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{ACB}$



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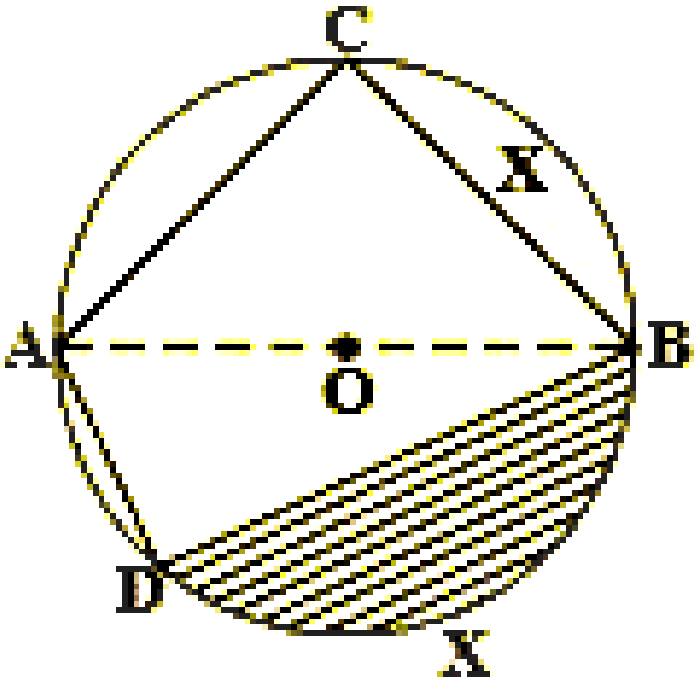
7. Name the following parts from the adjacent figure where 'O' is the centre of circle.

$\overline{AD}$



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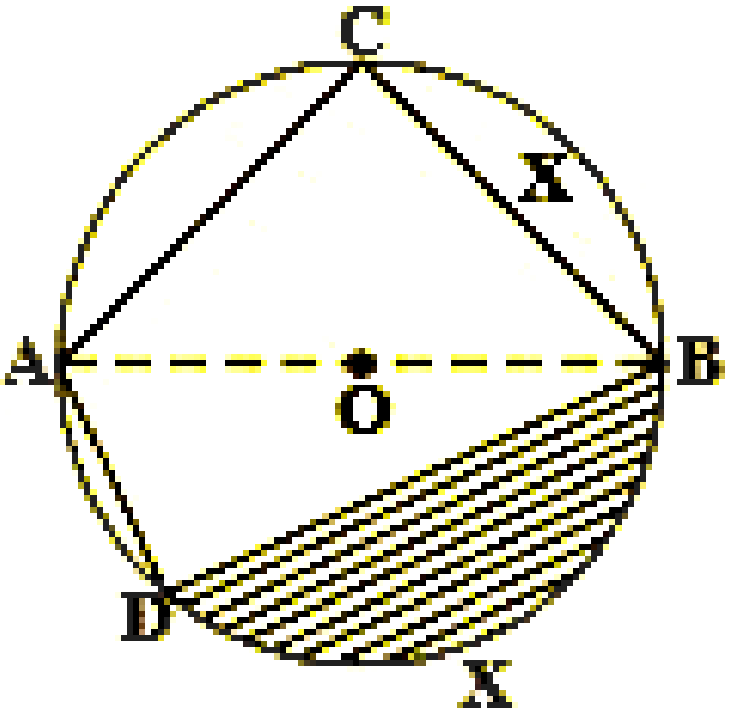
8. Name the following parts from the adjacent figure where 'O' is the centre of circle.

shaded region



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9. State true or false .

A circle divides the plane on which it lies into three parts.

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10. State true or false .

The region enclosed by a chord and the minor arc is minor segment

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11. State true or false .

The region enclosed by a chord and the major arc is major segment

Watch Video Solution

12. State true or false .

A diameter divides the circle into two unequal parts.

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13. State true or false .

A sector is the area enclosed by two radii and a chord

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14. State true or false .

The longest of all chords of a circle is called a diameter.

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15. State true or false .

The mid point of any diameter of a circle is the centre.

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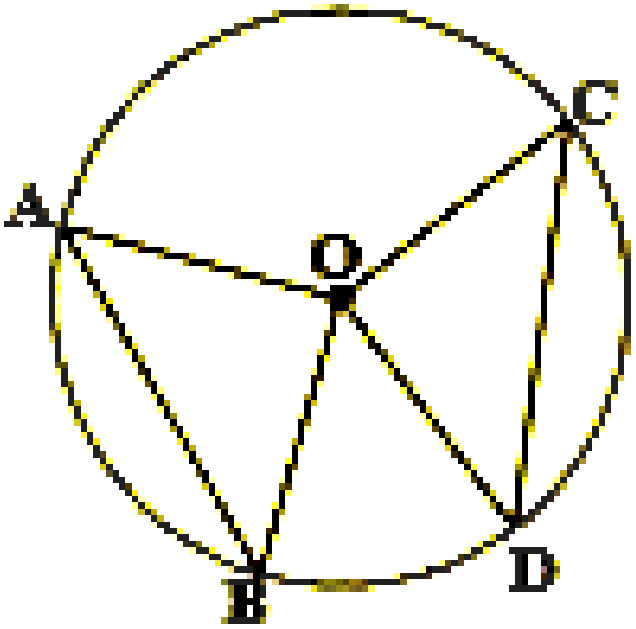
Exercise 12 2

1. In the figure, if AB = CD and $\angle AOB = 90^\circ$ find $\angle COD$



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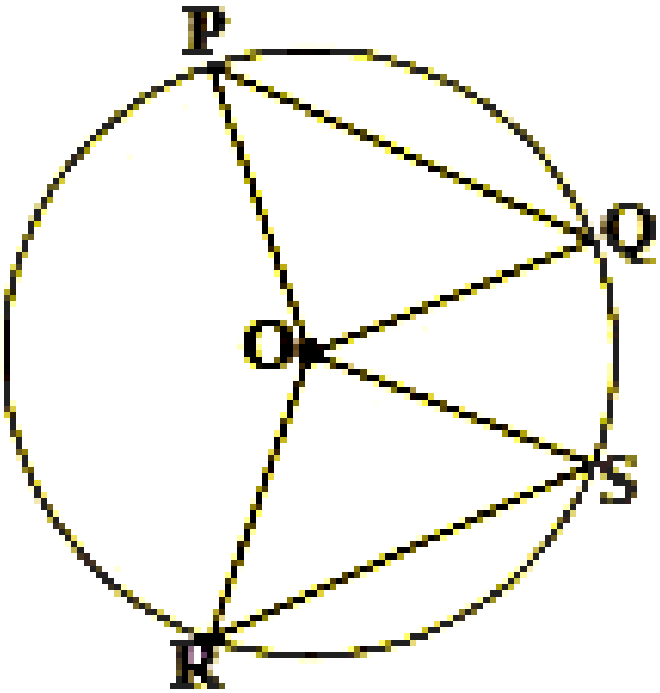
2. In the figure, PQ = RS and $\angle ORS = 48^\circ$. Find $\angle OPQ$ and $\angle ROS$.



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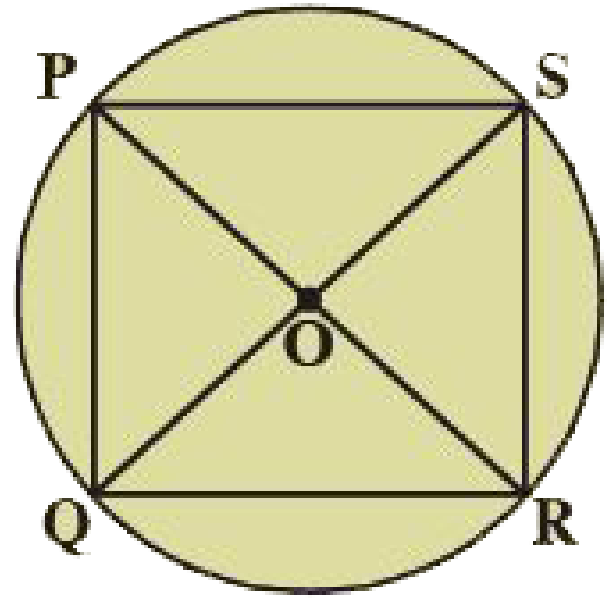
3. In the figure PR and QS are two diameters. Is PQ = RS?



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Exercise 12 3

1. Draw the following triangles and construct circumcircles for them : In ΔABC, AB = 6 cm, BC = 7 cm and $\angle A = 60^\circ$.

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2. Draw the following triangles and construct circumcircles for them.

in $\Delta PQR, PQ = 5cm, QR = 6cm$ and $RP = 8.2cm$

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3. Draw the following triangles and construct circumcircles for them: In

$\Delta XYZ, XY = 4.8cm$angleX = 60^@ and angleY = 70^@`.

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4. Draw two circles passing through A, B where AB = 5.4cm

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5. If two circles intersect at two points , then prove that their centres lie on the perpendicular bisector of the common chord.

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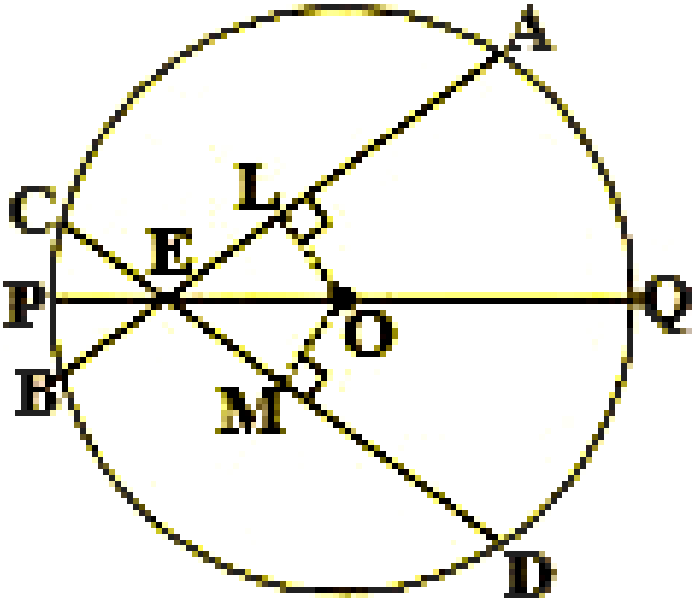
6. If two intersecting chords of a circle make equal angles with diameter passing through their point of intersection, prove that the chords are equal.



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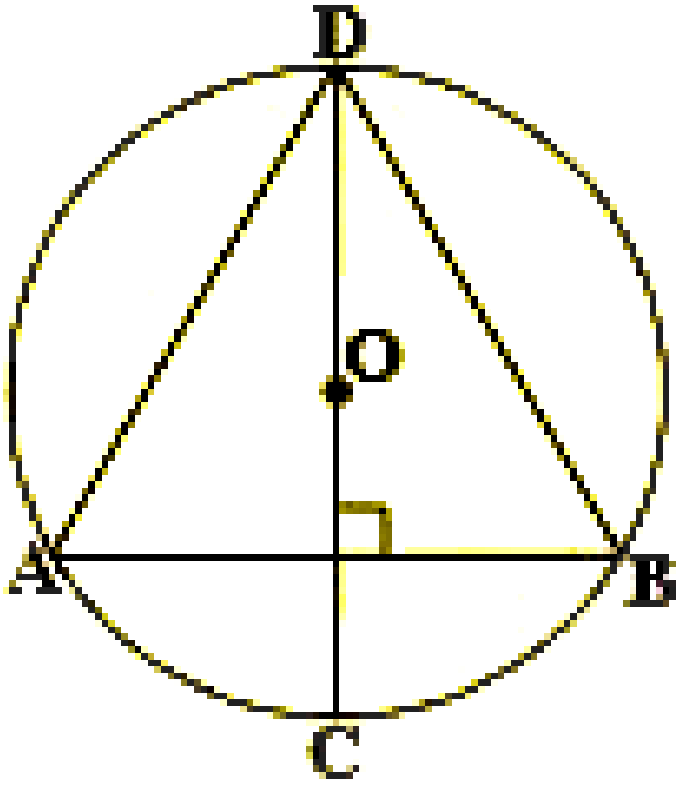
7. In the adjacent figure, AB is a chord of circle with centre O. CD is the diameter perpendicualr to AB. Show that AD = BD.



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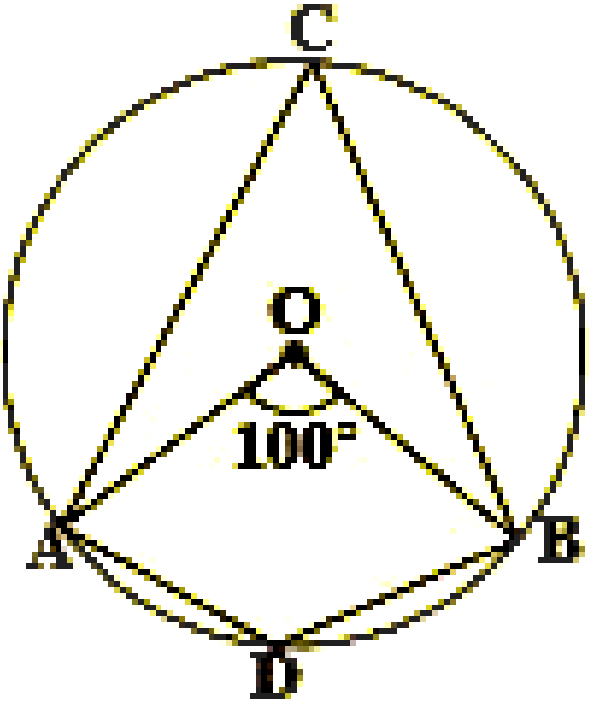
Exercise 12 4

1. In the figure, 'O' is the centre of the circle.

$\angle AOB = 100^\circ$ find $\angle ADB$.



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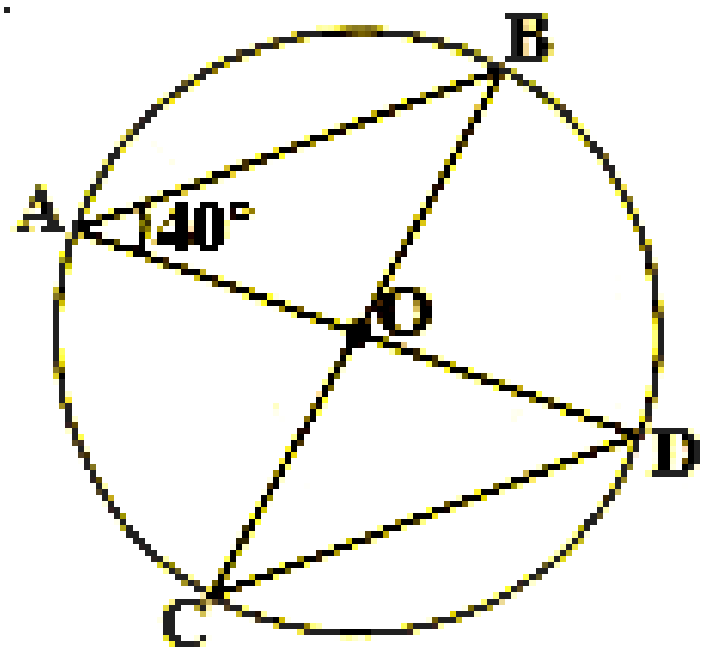
2. In the figure, $\angle BAD = 40^\circ$ then find $\angle BCD$.



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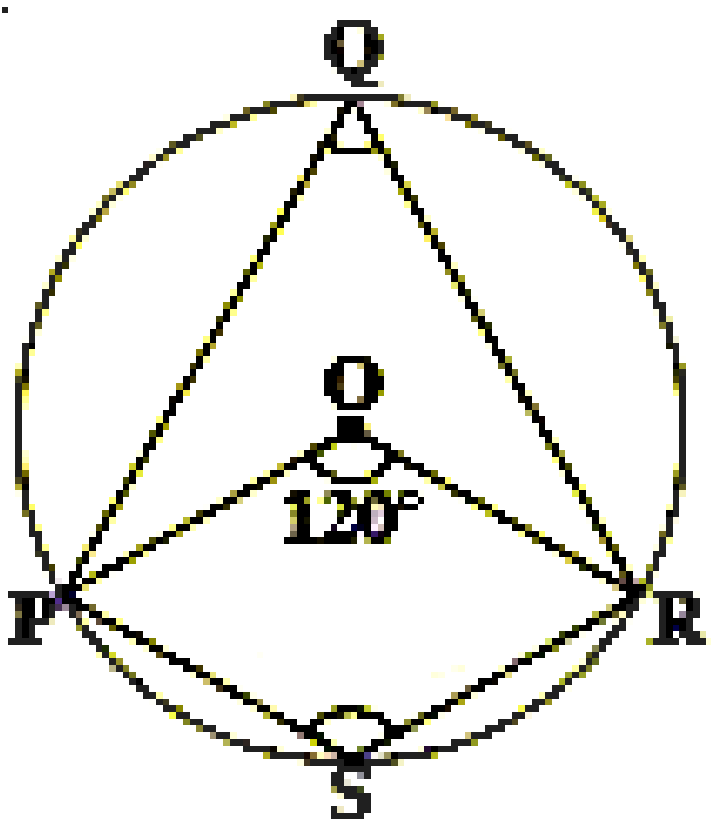
3. In the figure, O is the centre of the circle and $\angle POR = 120^\circ$. Find $\angle PQR$ and $\angle PSR$



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4. If a parallelogram is cyclic, then it is a rectangle. Justify.

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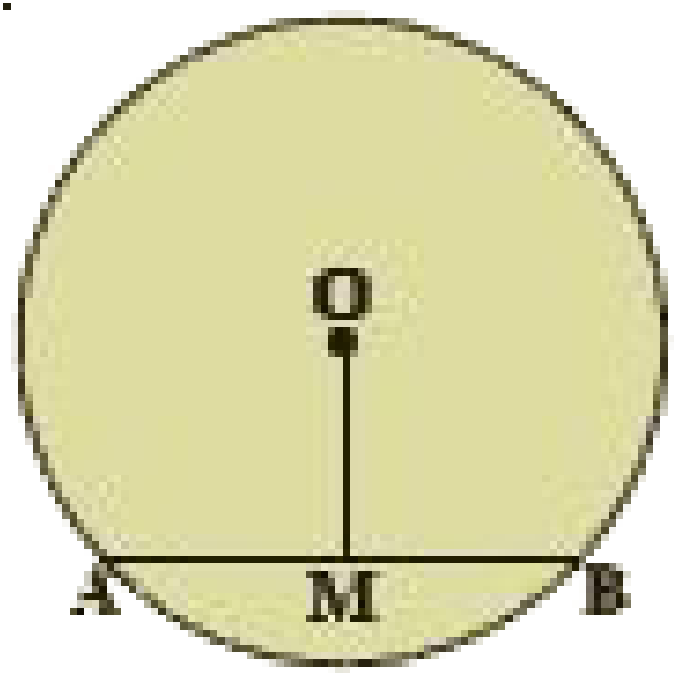
5. In the figure, 'O' is the centre of the circle. OM = 3cm and AB = 8cm.

Find the radius of the circle



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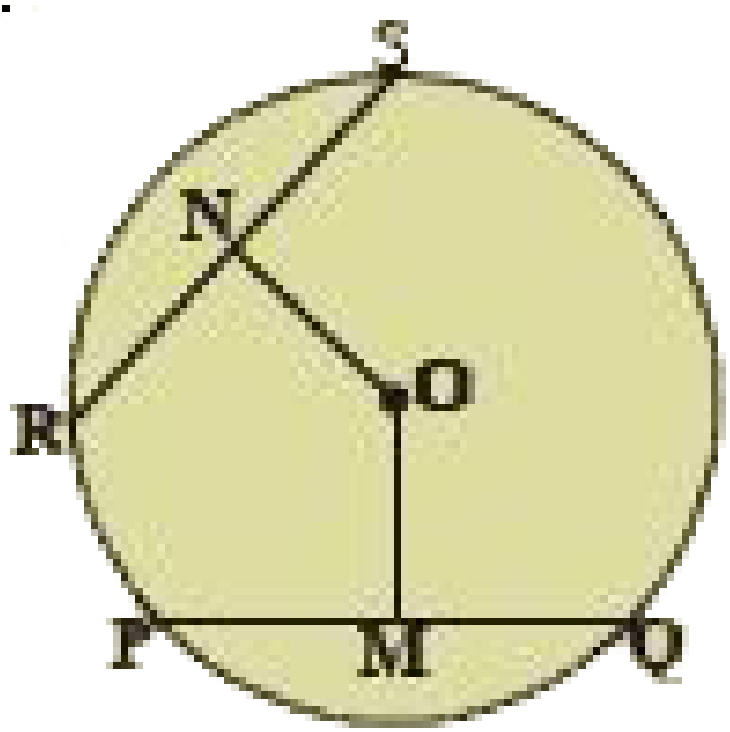
6. In the figure, 'O' is the centre of the circle and OM, ON are the perpendiculars from the centre to the chords PQ and RS. If OM = ON

and PQ = 6cm. Find RS



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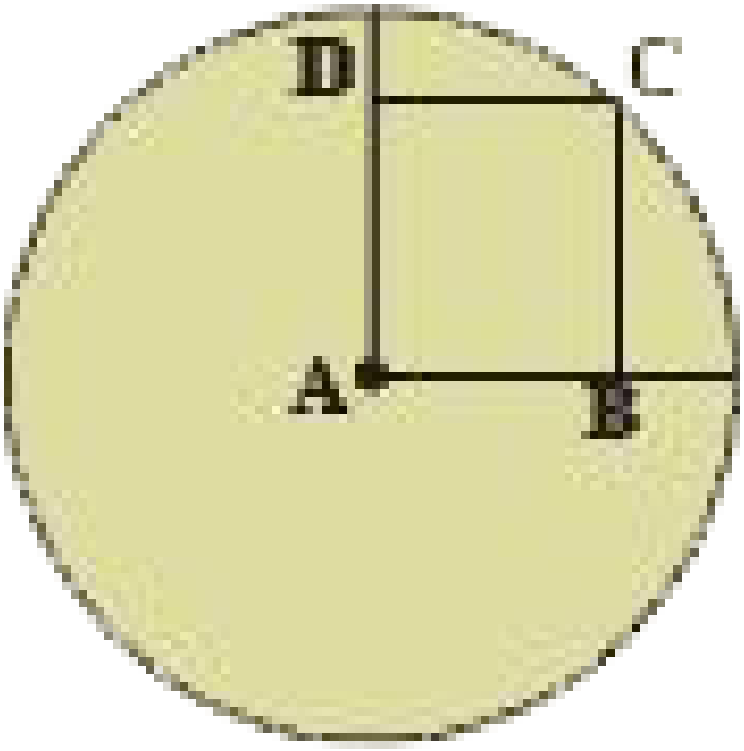
7. A is the centre of the circle and ABCD is a square. If BD = 4cm then find the radius of the circle



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8. Draw a circle with any radius and then draw two chords equidistant from the centre.

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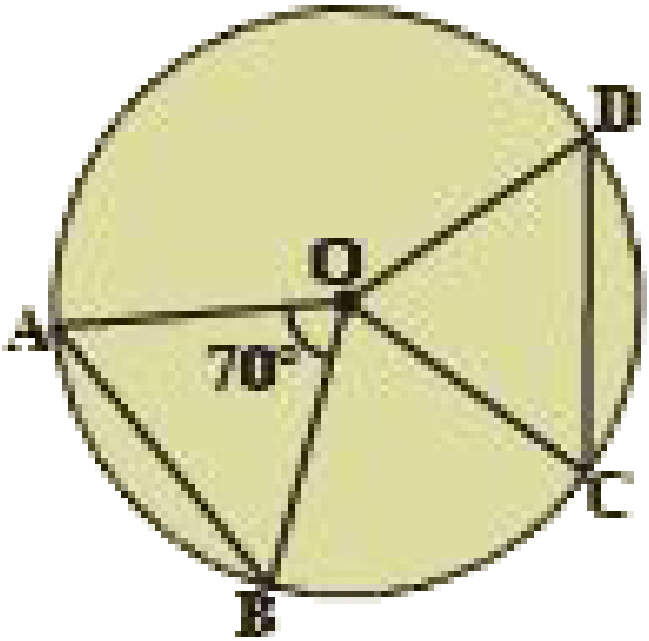
9. In the given figure 'O' is the centre of the circle and AB, CD are equal chords. If $\angle AOB = 70^\circ$. Find the angles of the ΔOCD



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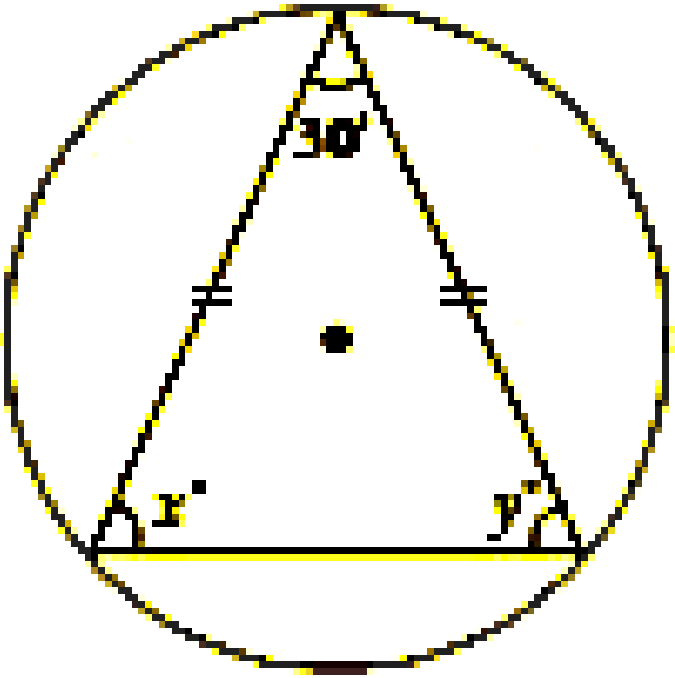
Exercise 12 5

1. Find the values of x and y in the figure given below .



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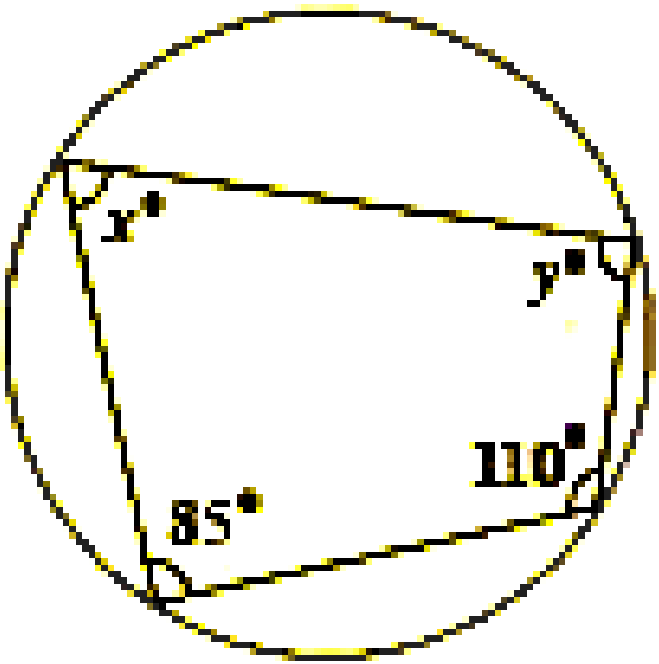
2. Find the values of x and y in the figure given below .



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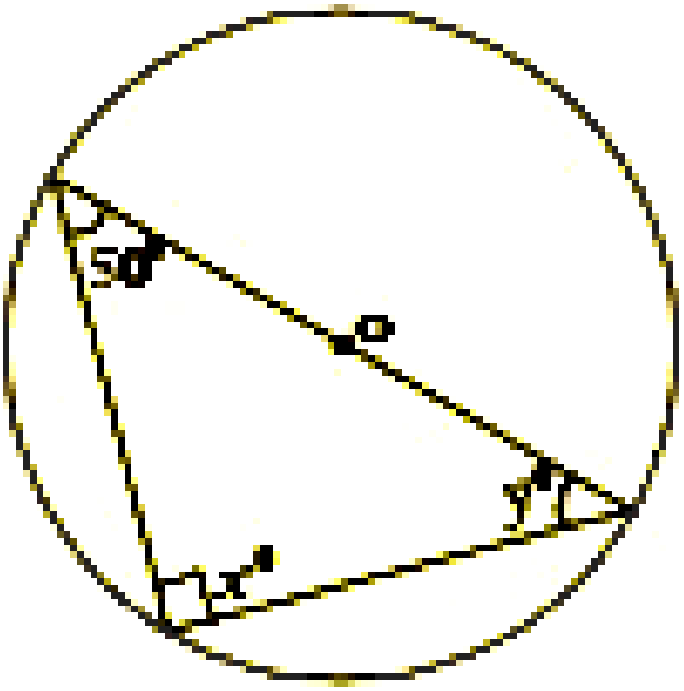
3. Find the values of x and y in the figure given below .



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4. Given that the vertices A, B, C of a quadrilateral ABCD lie on a circle. Also $\angle A + \angle C = 180^\circ$, then prove that the vertex D also lie on the same circle.

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5. Prove that a cyclic rhombus is a square

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6. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : Rectangle.

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7. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible :Trapezium.

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8. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : Obtuse triangle.

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9. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed, write not possible. Non-rectangular parallelogram

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10. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed, write not possible. Accute isosceles triangle

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11. For each of the following, draw a circle and inscribe the figure given. If a polygon of the given type can't be inscribed , write not possible : A quadrilateral PQRS with $\overline{PR}$ as diameter.

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Examples

1. Construct a circumcircle of the triangle ABC where AB = 5cm, $\angle B = 75^\circ$ and BC = 7 cm.

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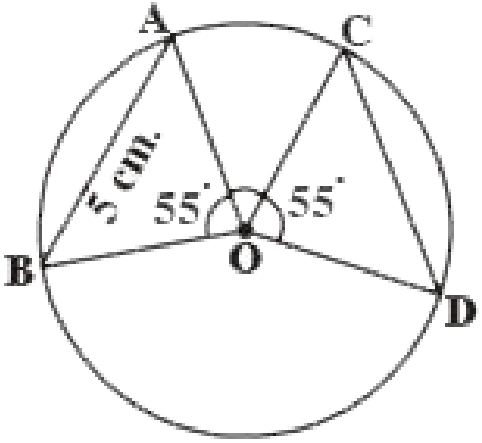
2. In the figure, O is the centre of the circle. Find the length of CD, if AB = 5 cm.



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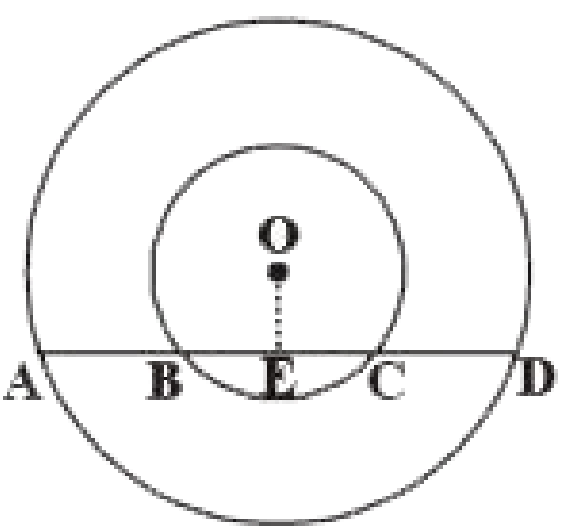
3. In the adjacent figure, there are two concentric circles with centre 'O'.

Chord AD of the bigger circle intersects the smaller circle at B and C.

Show that AB = CD.



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4. Let 'O' be the centre of a circle, PQ is a diameter, then prove that $\angle PRQ = 90^\circ$ (OR) Prove that angle in a semi-circle is right angle.

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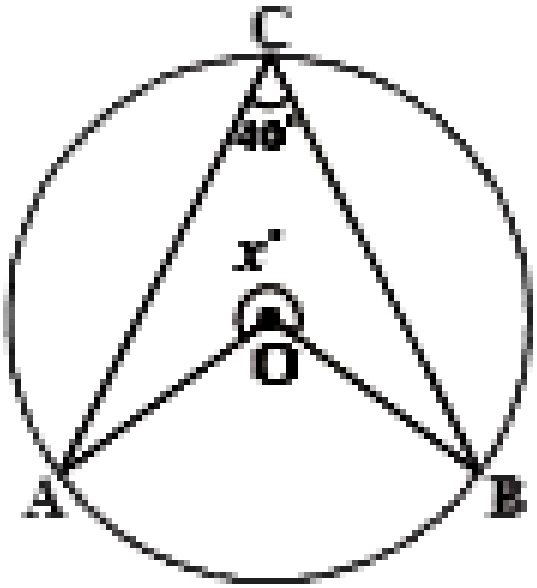
5. Find the value of x° in the adjacent figure.



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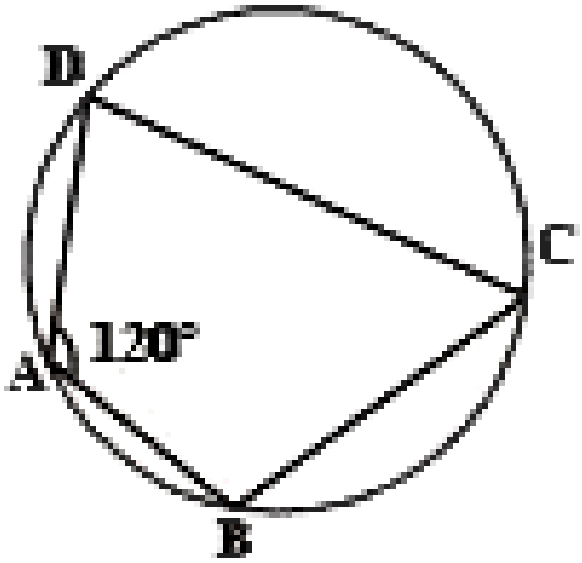
6. In the figure, $\angle A = 120^\circ$ then find $\angle C$?



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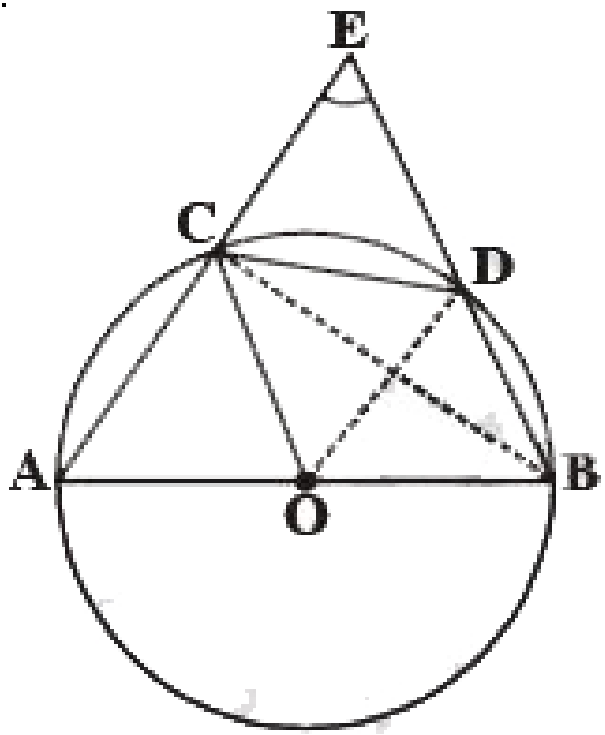
7. In figure, $\overline{AB}$ is a diameter of the circle, $\overline{CD}$ is a chord equal to the radius of the circle. $\overline{AC}$ and $\overline{BD}$ when extended intersect at a point E.

Prove that $\angle AEB = 6^\circ$.



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