# MATHS

# NCERT - NCERT MATHEMATICS(GUJRATI ENGLISH)

# CIRCLES

## Example

**1.** Construct a circumcircle of the triangle ABC where

AB = 5cm, $\angle B = 75^\circ$ and BC = 7cm

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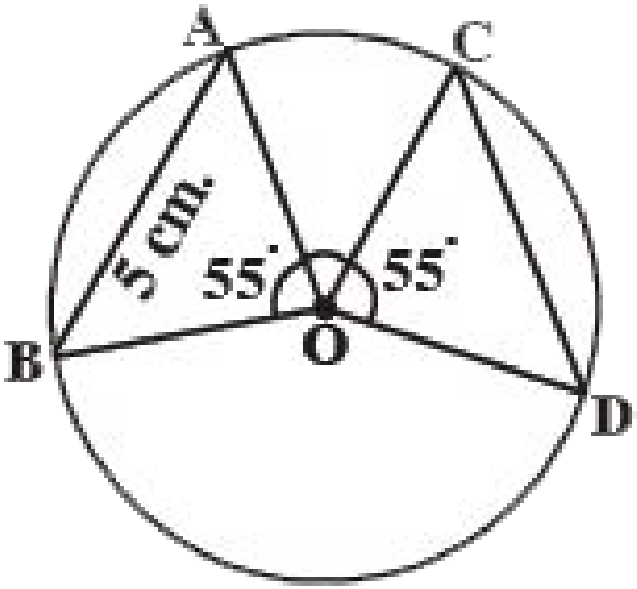
**2.** In the figure, O is the centre of the circle. Find the length of CD, if AB = 5 cm.

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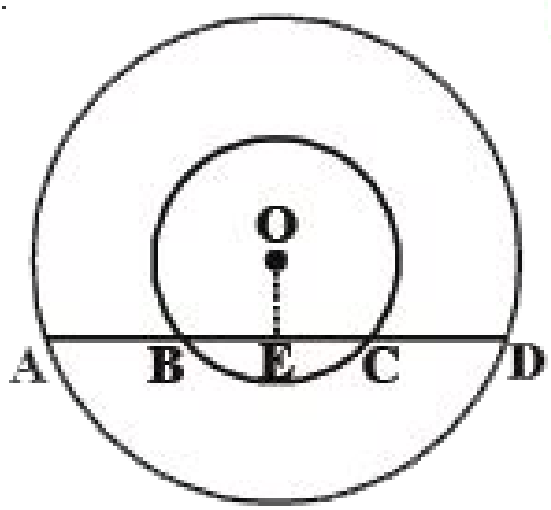
**3.** In the adjacent figure, there are two concentric circles with centre 'O'. Chord AD of the bigger circle intersects the smaller circle at B and C. Show that AB = CD.

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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 $x^\circ$ in the adjacent figure

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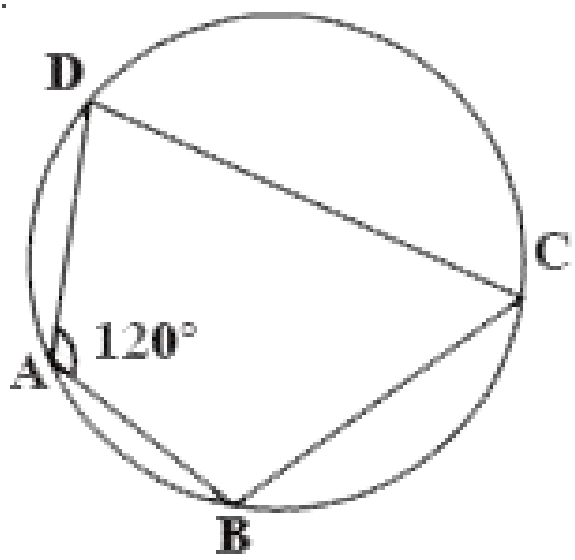
**6.** In the figure, $\angle A = 120^\circ$ then find $\angle C$ ?

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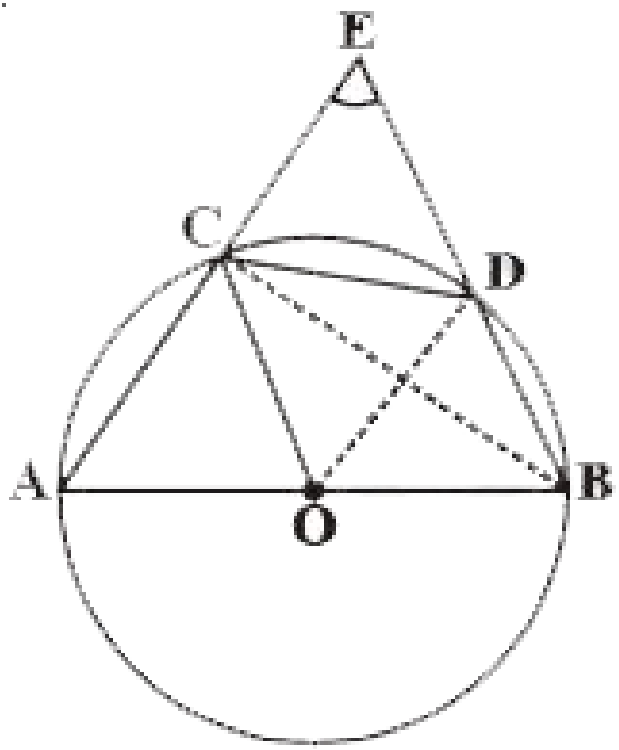
**7.** In figure, $\overline{AB}$ is a diameter of the circle, $\overline{CD}$ is a chord equal to the radius of the circle. $\overline{AC}$ and $\overline{BD}$

when extended intersect at a point E. Prove that $\angle AEB = 6^\circ$.

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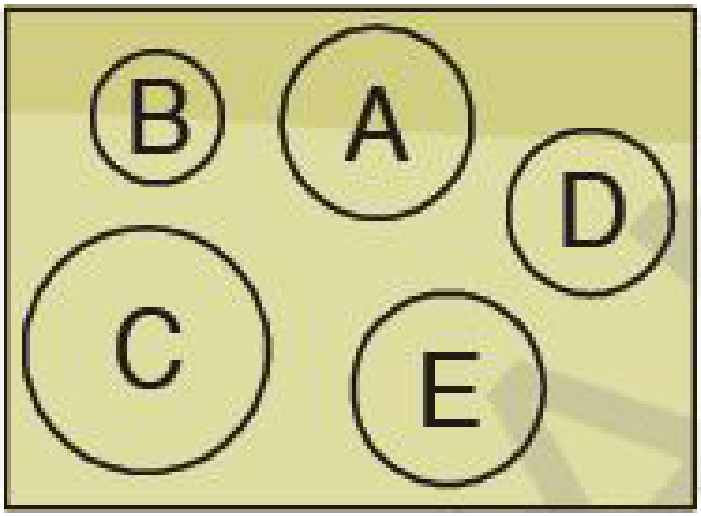
Do This

**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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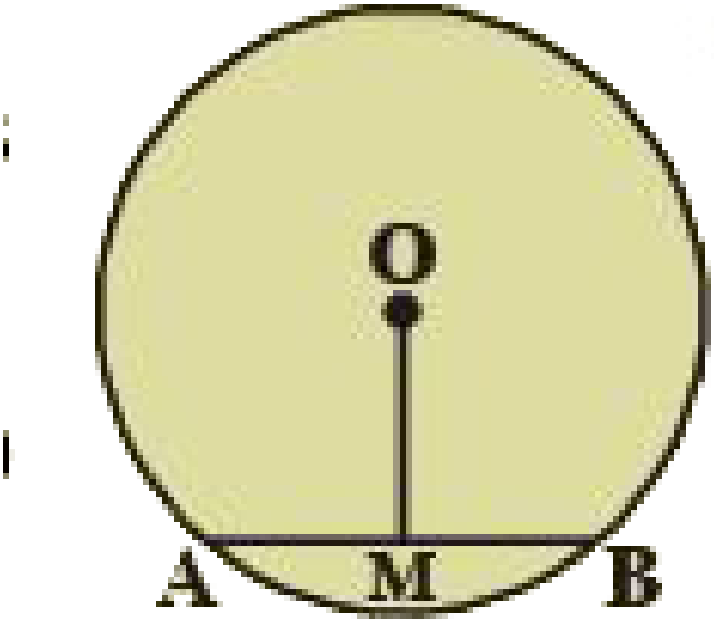
## Try This

**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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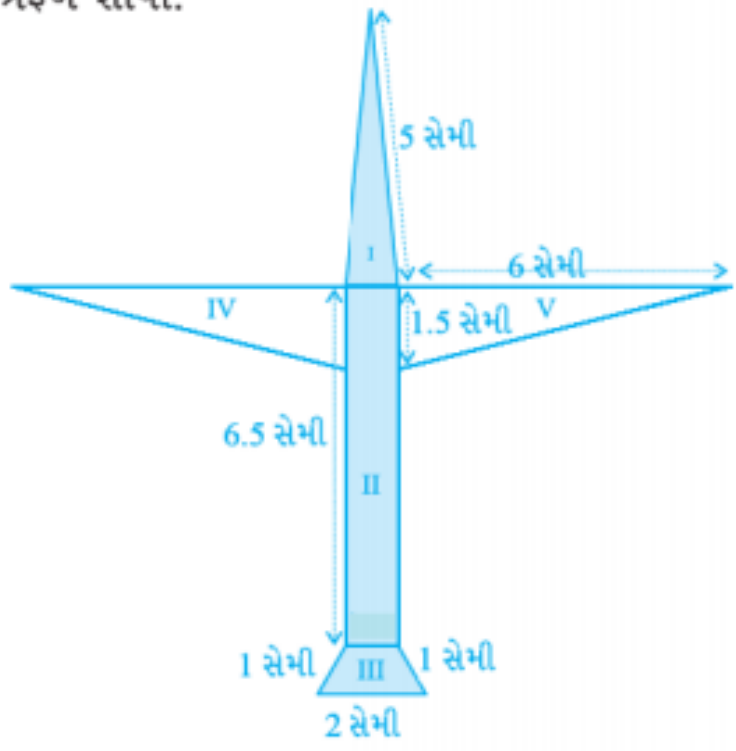


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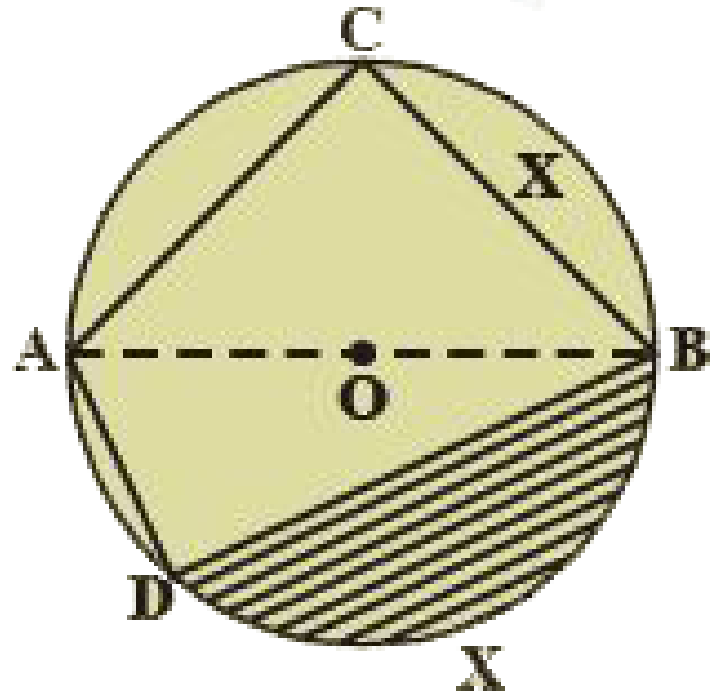
## Exercise 12 1

**1.** Name the following parts from the adjacent figure where ‘O’ is the centre of the circle




(i) $\overline{AO}$ (ii) $\overline{AB}$ (iii) $\overset{\frown}{BC}$

(iv) $\overline{AC}$ (v) $\overset{\frown}{DCB}$ (vi) $\overset{\frown}{ACB}$

(vii) $\overline{AD}$ (viii) shaded region

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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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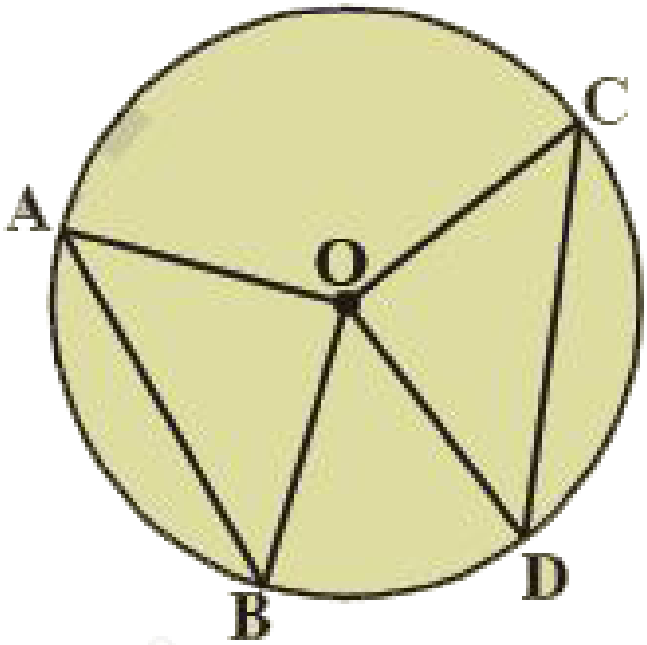
## Exercise 12 2

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

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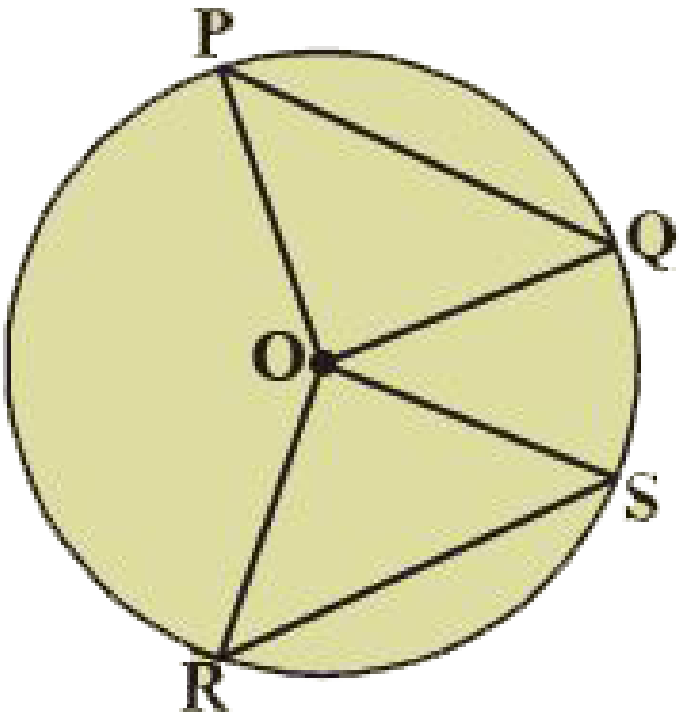
**2.** In the figure , PQ = RS and $\angle ORS = 48^\circ$ . Find $\angle OPQ$ and $\angle ROS$

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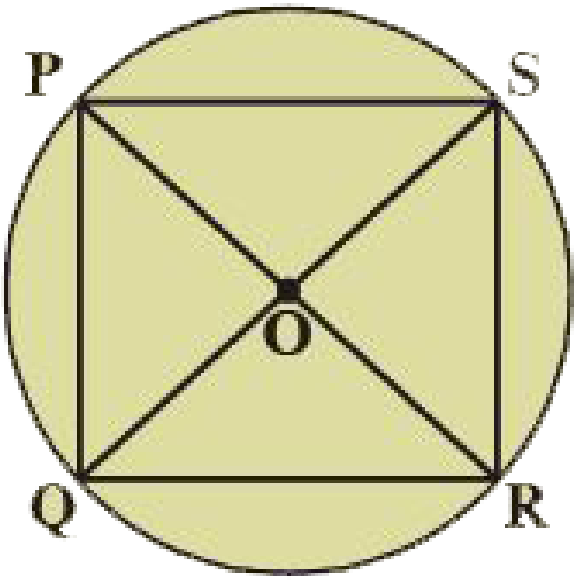
**3.** In the figure PR and QS are two diameters. Is PQ = RS?

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## Exercise 12 3

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

In

$\Delta ABC, AB = 6cm, BC = 7cm$ 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.** 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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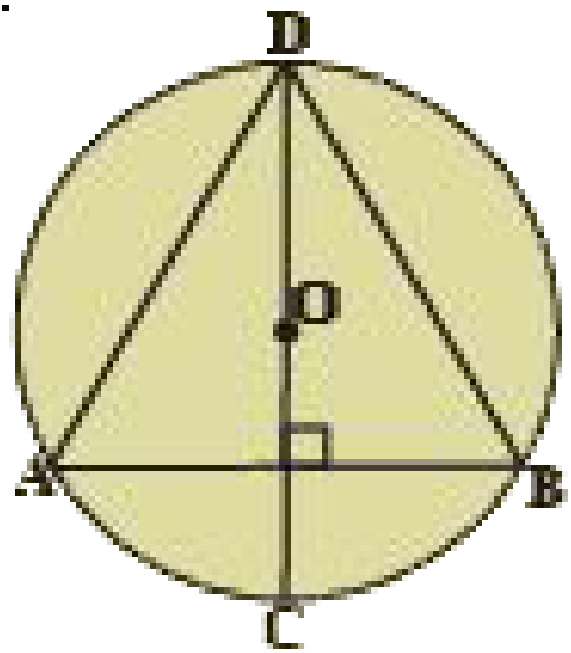
**6.** In the adjacent figure, AB is a chord of circle with centre O. CD is the diameter perpendicualr to AB.

Show that AD = BD

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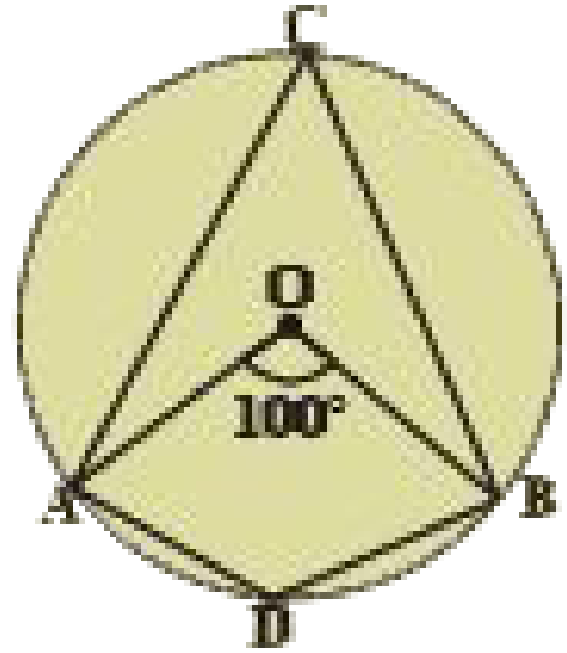
Exercise 12 4

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

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

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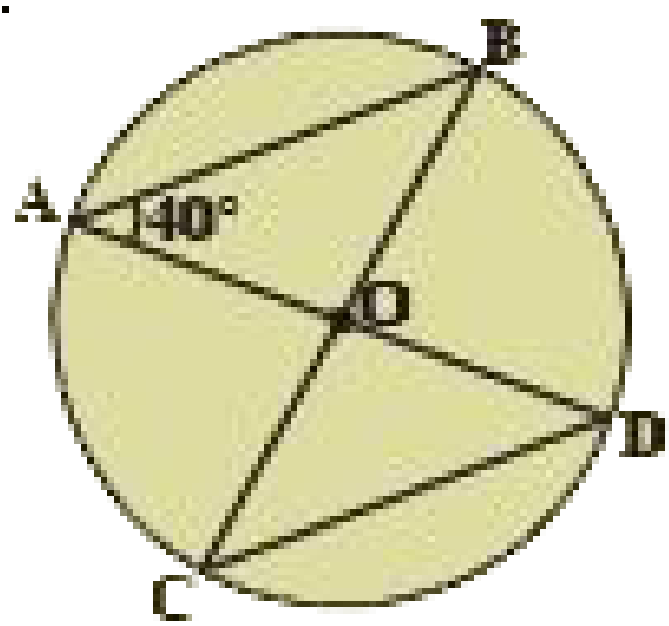
**2.** In the figure $\angle BAD = 40^\circ$ then find $\angle BCD$

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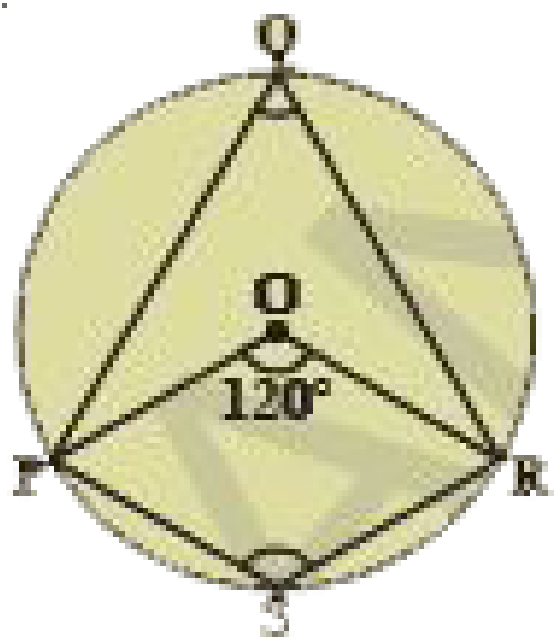
**3.** In the figure , O is the centre of the circle and $\angle POR = 120^\circ$ . Find $\angle PQR$ and $\angle PSR$

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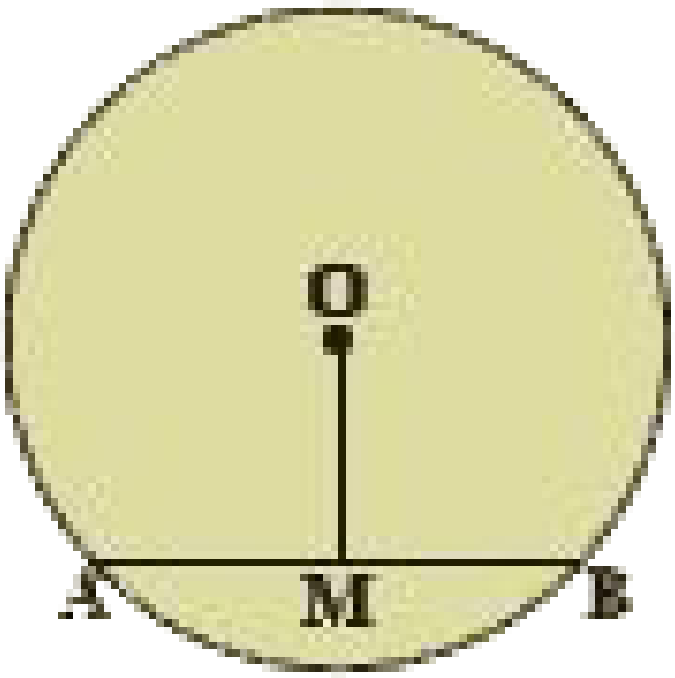
**4.** In the figure, 'O' is the centre of the circle. OM = 3cm and AB = 8cm. Find the radius of the circle

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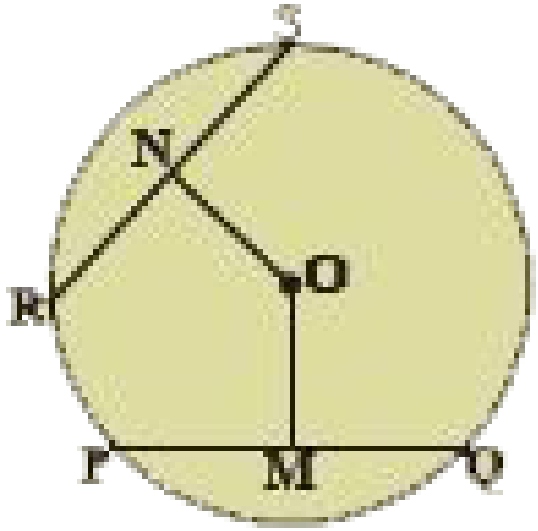
**5.** In the figure, 'O' is the centre of the circle and OM, ON are the perpendiculars from the centre to the chords PQ and RS. If OM = ON and PQ = 6cm. Find RS

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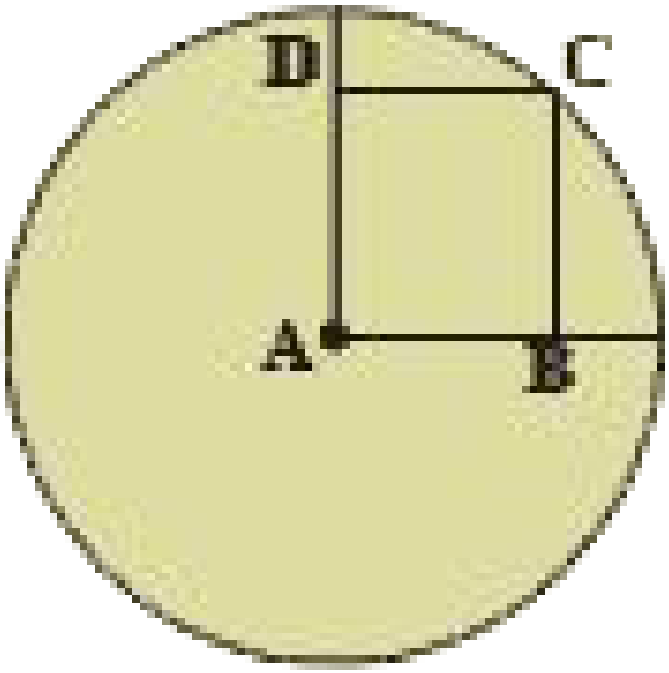
**6.** A is the centre of the circle and ABCD is a square.

If BD = 4cm then find the radius of the circle

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

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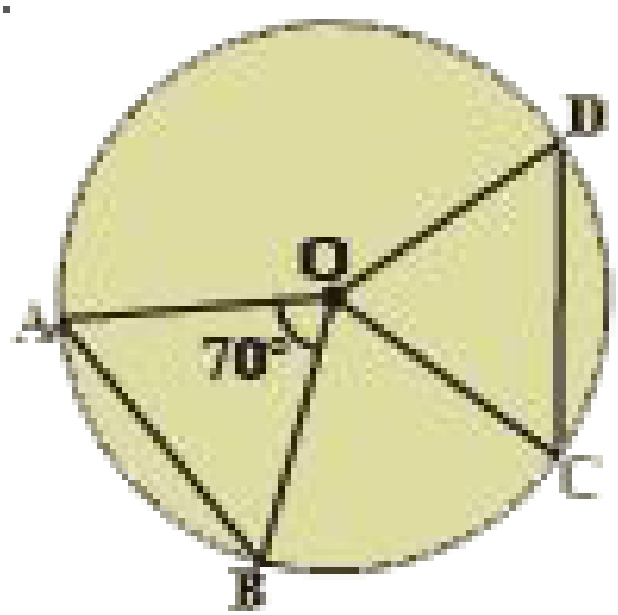
**8.** In the given figure 'O' is the centre of the circle and AB, CD are equal chords. If $\angle AOB = 70^\circ$ . Find

the angles of the $\Delta OCD$

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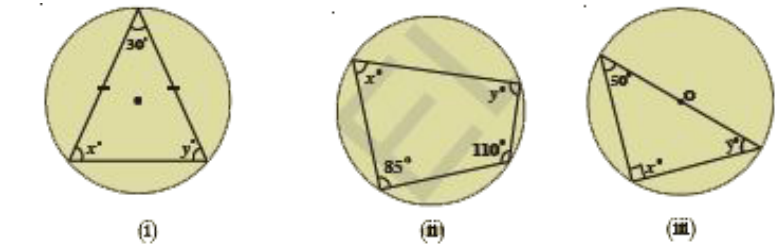
Exercise 12 5

**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. (a) Rectangle (b)Trapezium (c) Obtuse triangle (d) Non-rectangular parallelogram (e) Accute isosceles triangle

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