

# MATHS

## BOOKS - VIDHYASANGAM - RAO'S ACADEMY MATHS (KANNADA ENGLISH)

### CIRCLES

**Exercise 12 1 Fill In The Blanks**

1. The centre of a circle lies in \_\_\_\_\_ of the circle. (exterior/interior)



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2. A point, whose distance from the centre of a circle is greater than its radius lies in \_\_\_\_\_ of the circle.(exterior/interior)



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3. The longest chord of a circle is a \_\_\_\_\_ of the circle.



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4. An arc is a \_\_\_\_\_ when its ends are the ends of a diameter.



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5. Segment of a circle is the region between an arc and \_\_\_\_\_ of the circle.



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6. A circle divides the plane, on which it lies, in \_\_\_\_\_ parts.



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**Exercise 12 1 Write True Of False Give Reasons  
For Your Answers**

**1. True or False:**

Line segment joining the centre to any point on the circle is a radius of the circle.



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**2. True or False:**

A circle has only finite number of equal chords.



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### 3. True or False:

If a circle is divided into three equal arcs, each is a major arc.



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### 4. True or False:

A chord of a circle, which is twice as long as its radius, is a diameter of the circle.



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**5. True or False:**

Sector is the region between the chord and its corresponding arc.



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**6. True or False:**

A circle is a plane figure.



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1. Suppose you are given a circle. Give a construction to find its centre.



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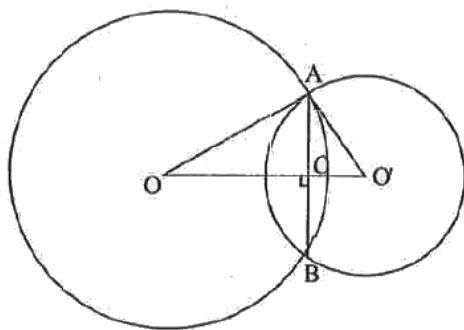
2. If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.



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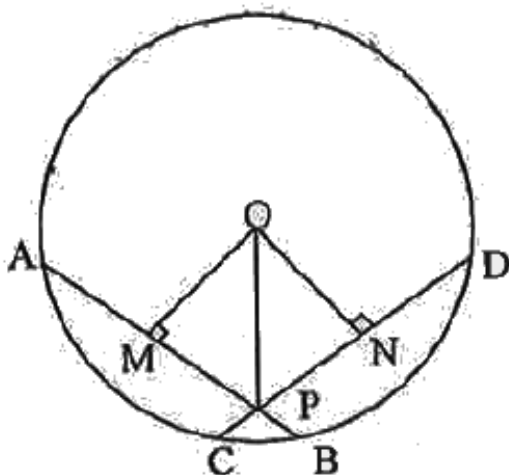


1. Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm, Find the length of the common chord.



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2. If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chords.



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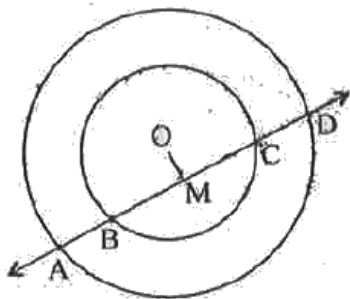
**3.** If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to corresponding segments of the other chord.



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**4.** If a line intersects two concentric circles (circles with the same centre) with centre O at

A, B, C and D, prove that  $AB = CD$ .



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5. Three girls Reshma, Salma and Mandeeep are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Madip, Mandeeep to Reshma. If the distance between Reshma and

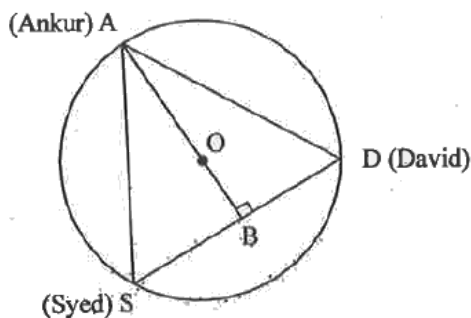
Salma and between Salma and Mandeep is 6m each, what is the distance between Reshma and Mandeep?



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**6.** A circular park of radius 20m is situated in a colony. Three boys Ankur, Syed and David are sitting at equal distance on its boundary each having a toy telephone in his hands to talk each other. Find the length of the string of

each phone.

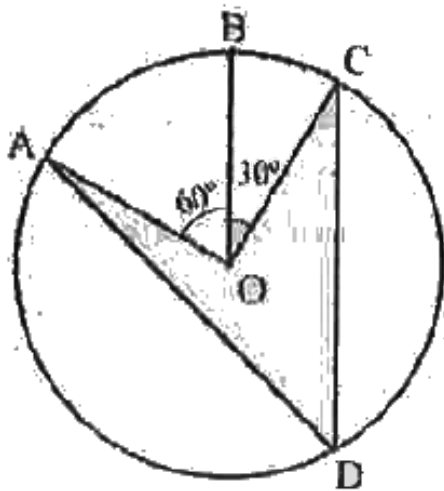


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## Exercise 12 5

1. In Fig. 12.36 A, B and C are three points on a circle with centre O such that  $\angle BOC = 30^\circ$  and  $\angle AOB = 60^\circ$ . If D is a point

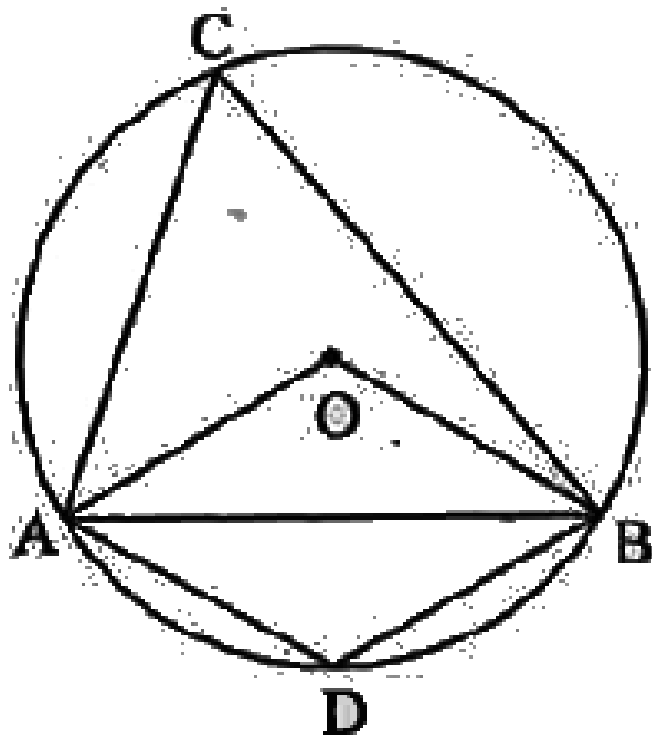
on the circle other than the arc ABC, find  $\angle ADC$ .



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2. 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

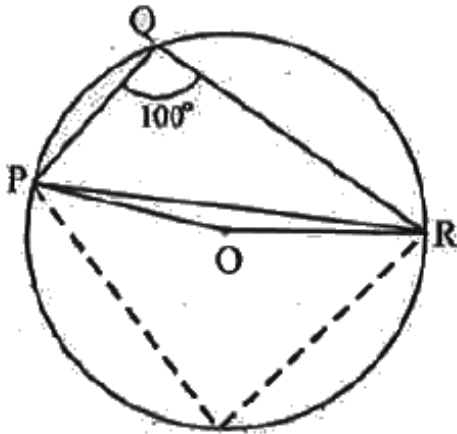
point on the major arc.



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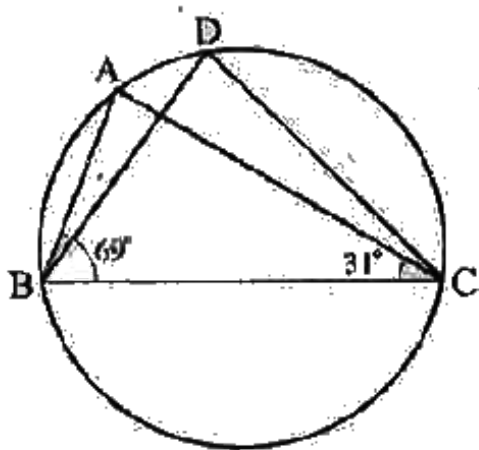


3. In the figure,  $PQR = 100^\circ$ , where P, Q and R are points on a circle with centre O. Find OPR.



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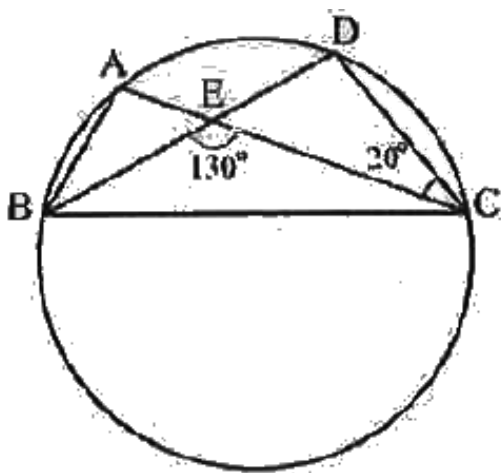
4. In the figure,  $ABC = 69^\circ$ ,  $ACB = 31^\circ$ ,  
find  $BDC$ .



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5. In Fig, A, B, C and D are four points on a circle AC and BD intersect at a point E such

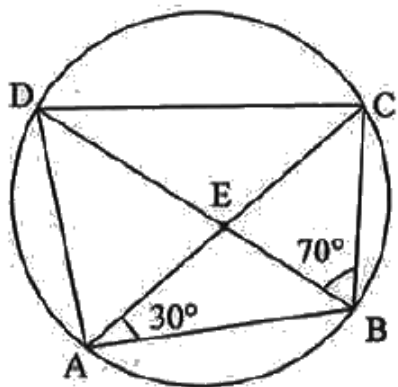
that  $\angle BEC = 130^\circ$  and  $\angle ECD = 20^\circ$ . Find  $\angle BAC$ .



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6.  $ABCD$  is a cyclic quadrilateral whose diagonals intersect at a point  $E$ . If

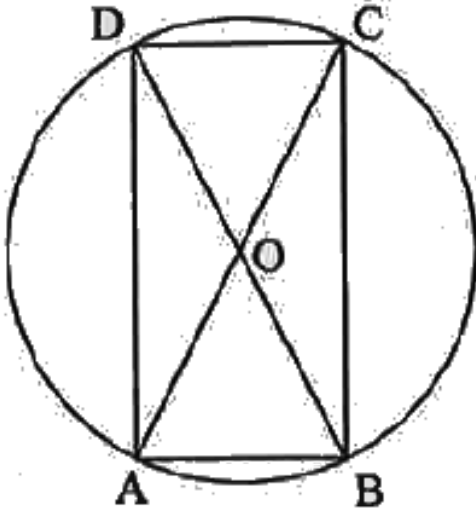
$\angle DBC = 70^\circ$ ,  $\angle BAC$  is  $30^\circ$ , find  $\angle BCD$ .



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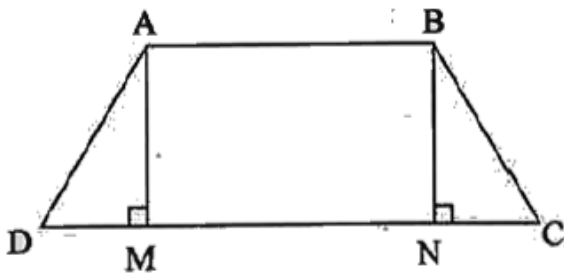
7. If diagonals of a cyclic quadrilateral are diameters of the circle through the vertices of

the quadrilateral prove that it is a rectangle.



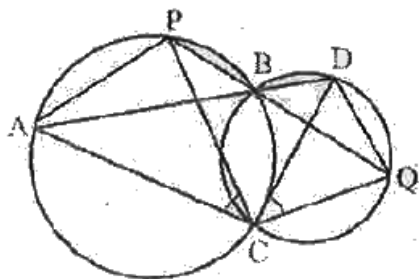
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8. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.



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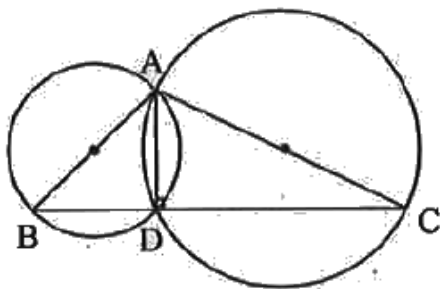
9. Two circles intersect at two points B and C. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively. Prove that  $\angle ACP = \angle QCD$ .





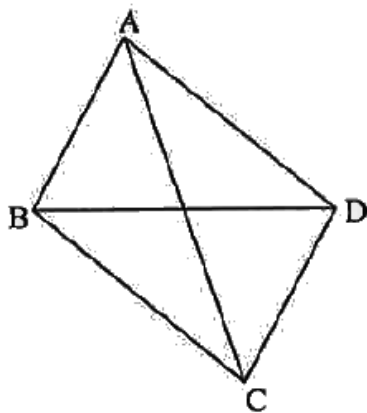
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10. If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lie on the third side.



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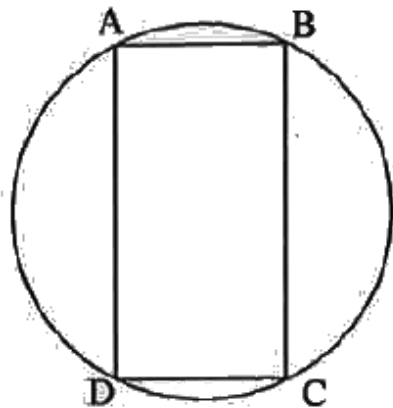
11. ABC and ADC are two right triangle with common hypotenuse AC. Prove that  $\angle CAD = \angle CBD$ .



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12. Prove that a cyclic parallelogram is a rectangle.





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## Exercise 12 6

1. Prove that the line of centres of two intersecting circles subtends equal angles at the two points of intersection.



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2. Two chords AB and CD of length 5 cm and 11 cm respectively of a circle are parallel to each other and are on opposite sides of its centre. If the distance between AB and CD is 6 cm, find the radius of the circle.



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3. The length of two parallel chords of a circle are 6 cm and 8 cm. If the smaller chord is at

distance 4 cm from the centre, what is the distance of the other chord from the centre?



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4. Prove that the circle drawn with any side of a rhombus as diameter, passes through the point of intersection of its diagonals.



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5. ABCD is a parallelogram. The circle through A, B and C intersect CD (produced if necessary) at E. Prove that  $AE = AD$ .



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6. AC and BD are chord of a circle which bisect each other. Prove that  
(i) AC and BD are diameters.



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7. AC and BD are chord of a circle which bisect each other. Prove that

(ii) ABCD is a rectangle.



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