MATHS

BOOKS - KUMAR PRAKASHAN KENDRA

MATHS (GUJRATI ENGLISH)

CIRCLES

Exercise 10 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 10 1 True Or False

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

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2. A cirecle has only finite number of equal chords.

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

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

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

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6. A circle is a plane figure.

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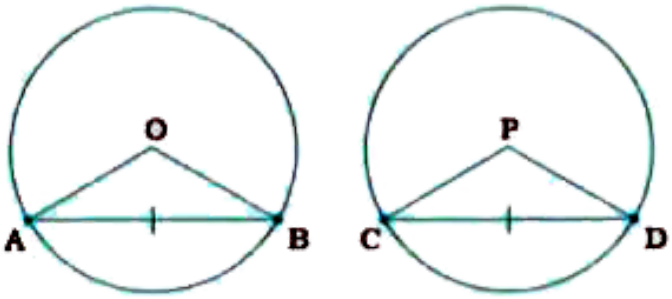
Exercise 10 2

1. Recall that two circles are congruent if they have the same radii. Proe that equal chords of congruent circles subtend equal angles at their centres.



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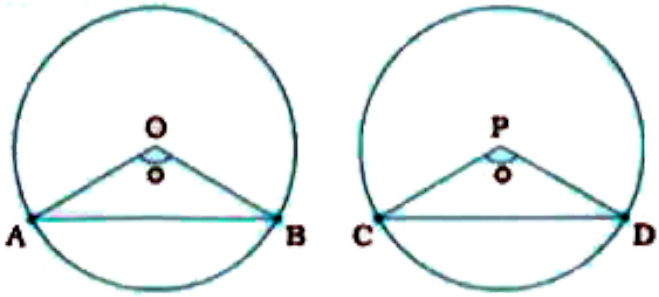
2. Prove that if chords f congruent circles subtend equal angles at their centres, then the chords are equal.



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Exercise 10 3

1. Draw different pairs of circles. How many points does each pair have in common ? What is the maximum number of common points ?

Pairs of circles	No. of common points
	0
	1
	2
	1
	0

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2. Suppose you ar given a circle. Give a construction to find its centre.

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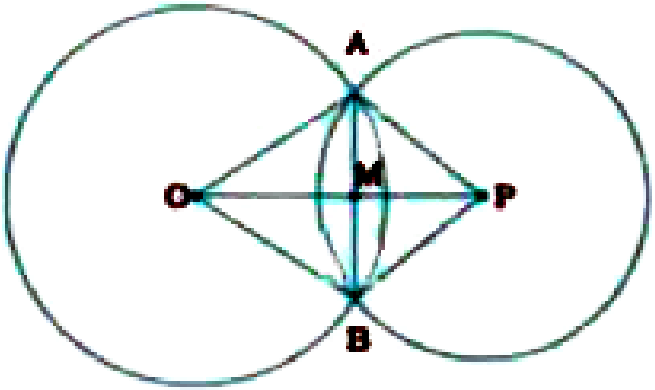
3. If two circles intersect at two points, prove that their centres lie on the perpendicular

bisector of the common chord.



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Exercise 10 4

1. If the radii of two circles with centres o and O' are 7 cm and 10 cm and the distance

between their centres is 12 cm. In how many point do the circle intersect?

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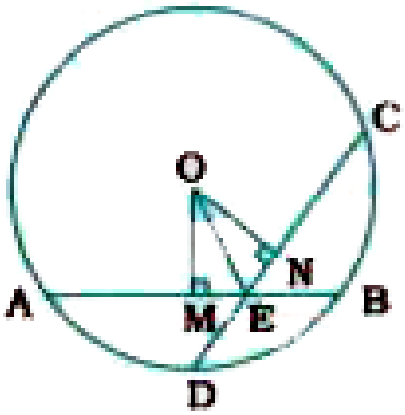
2. If two equal chords of a circle intersect within the circle, prove that the segments of one chord are equal to correspondig

segments of the other chord.



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3. 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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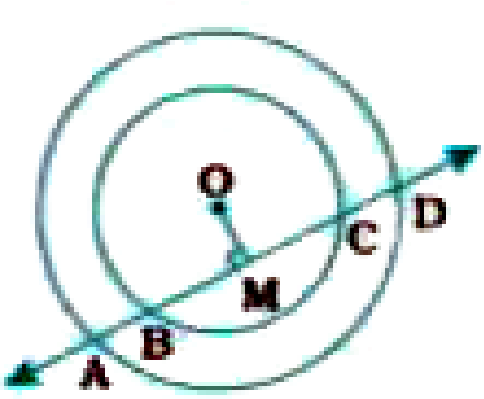
4. If a line intersects two concentric circles (circles with the same centre) with centre O at A,B,C and D), prove that $AB = CD$



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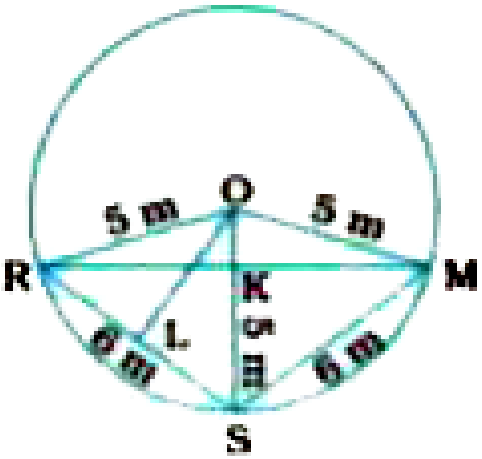
5. Three girls Reshma, Salma and Mandip are playing a game by standing on a circle of radius 5m drawn in a park. Reshma throws a ball to Salma, Salma to Mandip, Mandip to Reshma. If the distance between Reshma and Salma and between Salma and Mandip is 6 m each, what is the distance between Reshma

and Mandip ?



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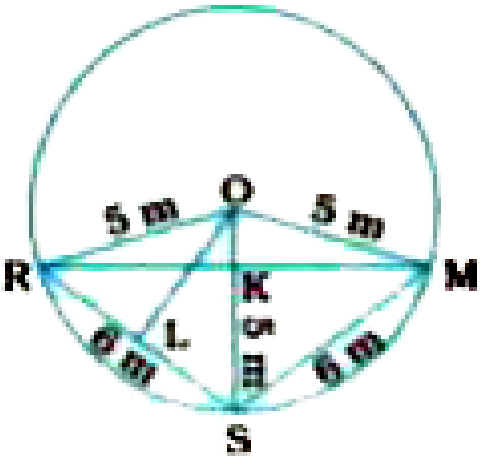

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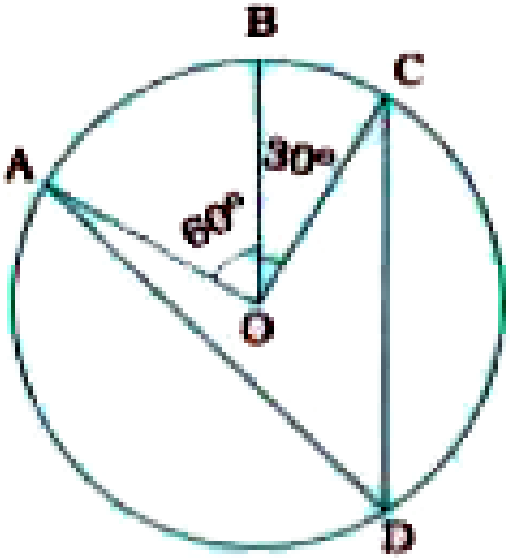
Exercise 10 5

1. In the given figure, 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 are 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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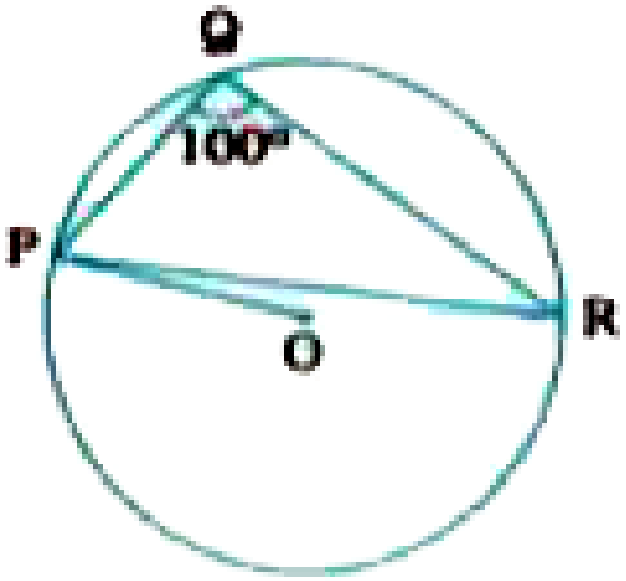
3. In the given figure, $\angle PQR = 100^\circ$, where P, 9 and R are points on a circle with centre O.

Find $\angle OPR$.



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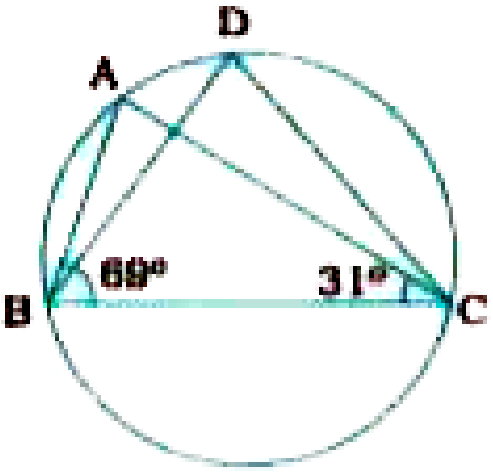
4. In the given figure, $\angle ABC = 69^\circ, \angle ACB = 31^\circ,$



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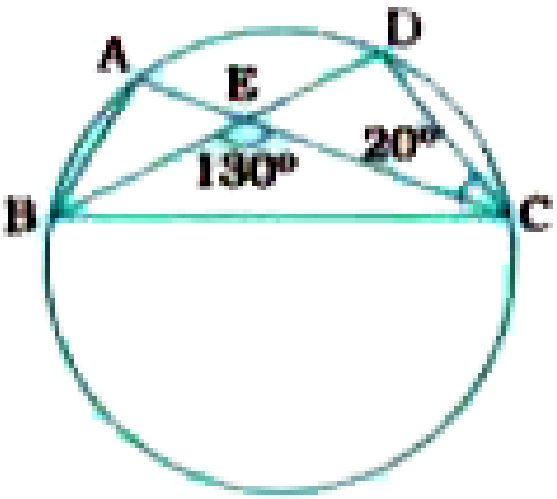
5. In the given figure, A, B, C and D are four points on a circle. AC and BD intersect at a point E such that $\angle BEC = 130^\circ$ and $\angle ECD = 20^\circ$. . Find

$\angle BAC$.



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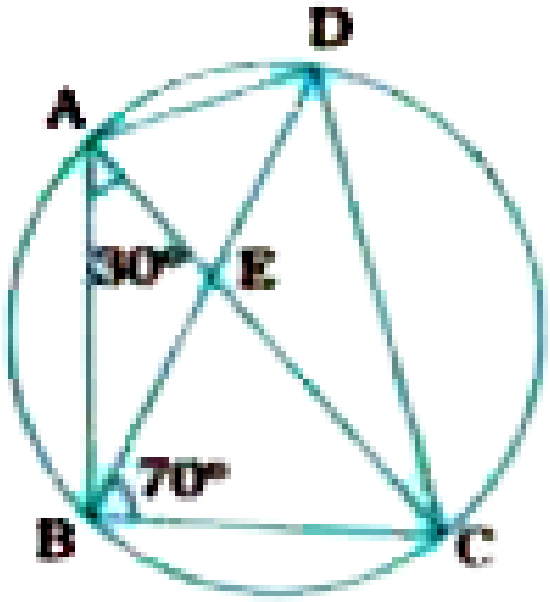
6. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DBC = 70^\circ, \angle BACis30^\circ,$ find $\angle BCD.$

Further, if AB = BC, find $\angle ECD$.



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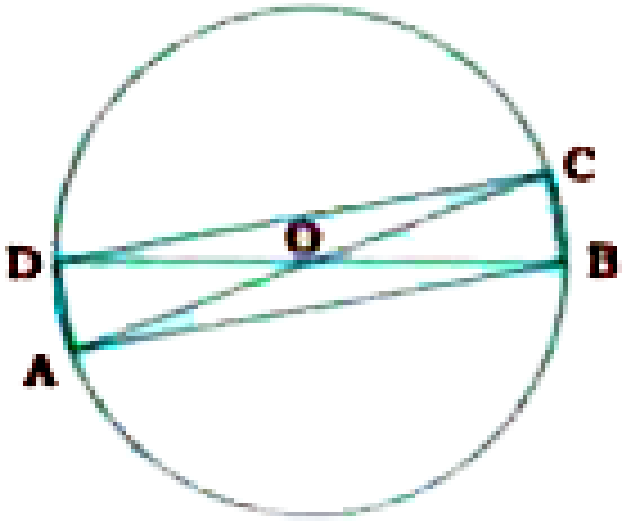
7. If diagonals of a cyclic quadrilateral are diameters of the circle through the vertices of

the quadrilateral, prove that it is a rectangle.



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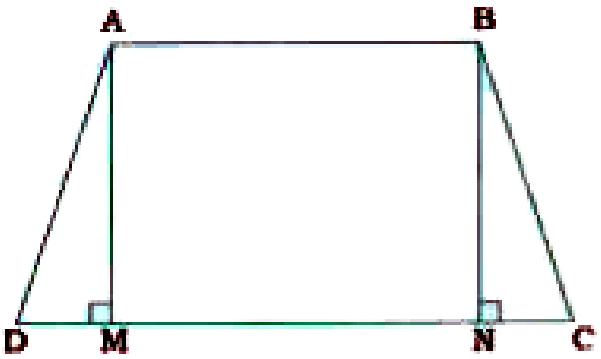
8. If the non-parallel sides of a trapezium are equal, prove that it is cyclic.



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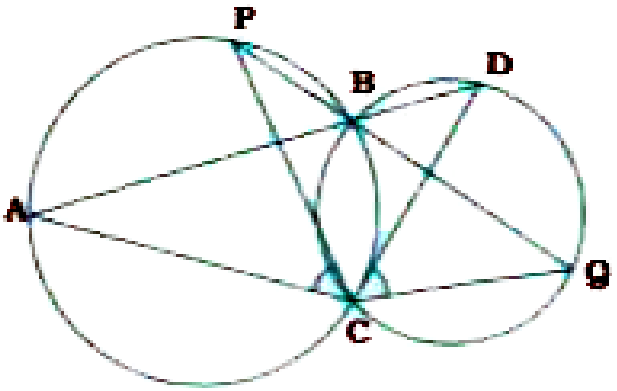
9. Two circles intersect at two points B and c. Through B, two line segments ABD and PBQ are drawn to intersect the circles at A, D and P, Q respectively (see the given figure). Prove

that $\angle ACP = \angle QCD$.



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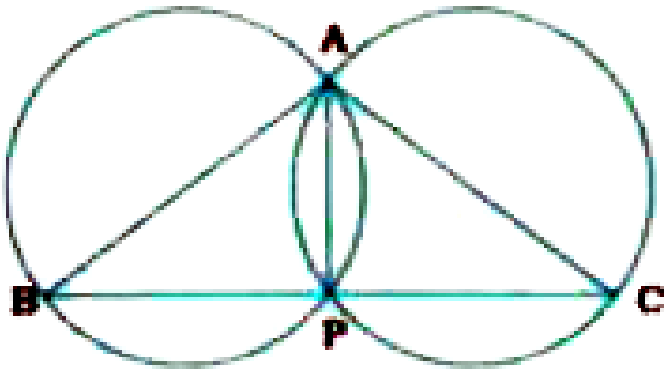
10. If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lie on the third

side.



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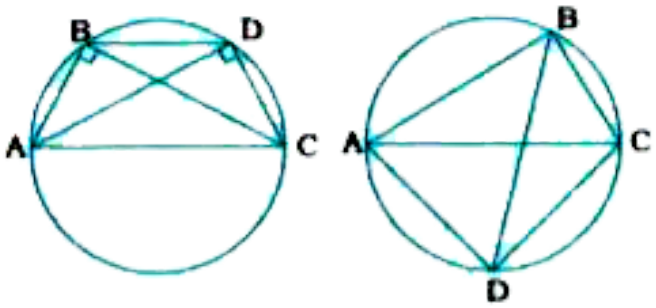
11. ABC and ADC are two right triangles with common hypotenuse AC. Prove that

$\angle CAD = \angle CBD.$



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12. Prove that a cyclic parallelogram is a rectangle.

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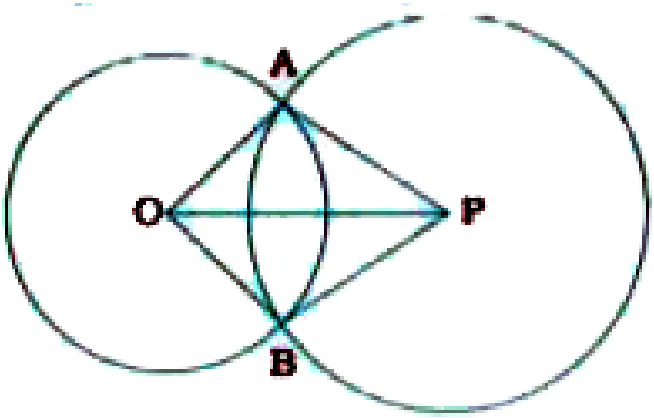
Exercise 10 6

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



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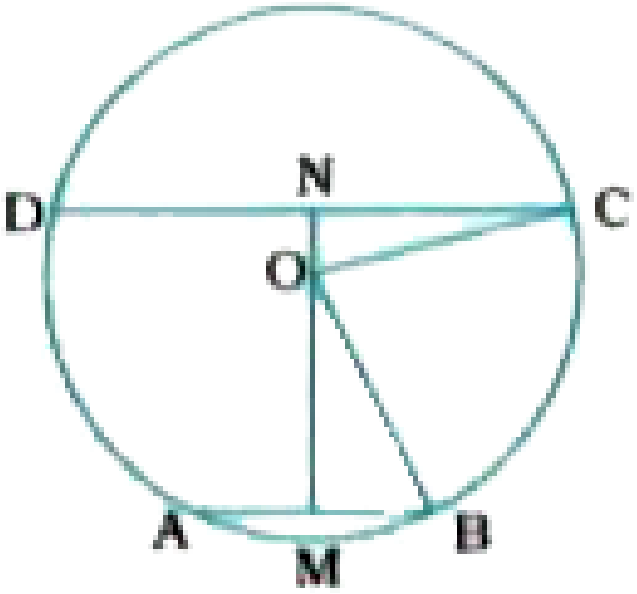
2. Two chords AB and CD of lengths 5 cm and 11 cm respectively of a circle are parallel to each other and are on opposite sides of its centre. If the distance between AB and CD is 6 cm, find the radius of the circle.



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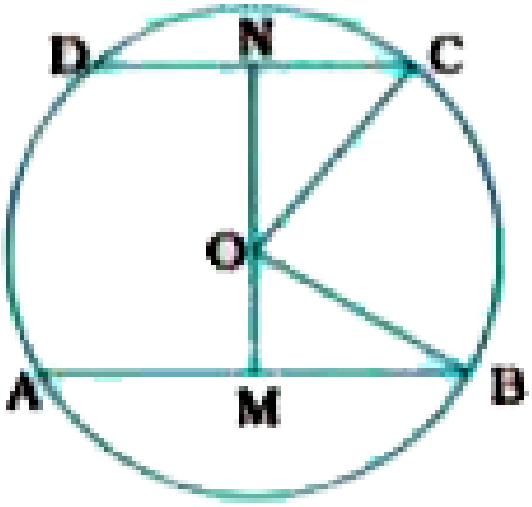
3. The lengths of two parallel chords of a circle are 6 cm and 8 cm. If the smaller chords is at distance 4 cm from the centre, what is the distance of the other chord from the centre ?



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Skill Testing Exercise

1. AB is a chord of a circle with centre o and diameter 20 cm. If AB = 12 cm, find the distance of AB from O.

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2. AB and CD are chords of a circle with centre O. AB = 48 cm and its distance from centre o is

10 cm. If the distance of CD from centre O is 24 cm, find the length of CD.

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3. In a circle with centre O. AB and CD are parallel chords lying on opposite sides of a diameter parallel to them. If AB = 30 cm, CD - 48 cm and the distance between AB and CD is 27 cm, find the radius of the circle.

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4. ABCD is a cyclic quadrilateral. If $AD \mid\mid BC$ and $\angle B = 70^\circ$, find the other angles of ABCD.

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5. In cyclic quadrilateral ABCD. Diagonals AC and BD intersect at P. If $\angle DBC = 70^\circ$ and $\angle BAC = 30^\circ$, find $\angle BCD$.

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6. In a circle with centre O, AB is a diameter and ABCD is a cylical quadrilateral. If $\angle ADC = 140^\circ$, find $\angle BAC$.

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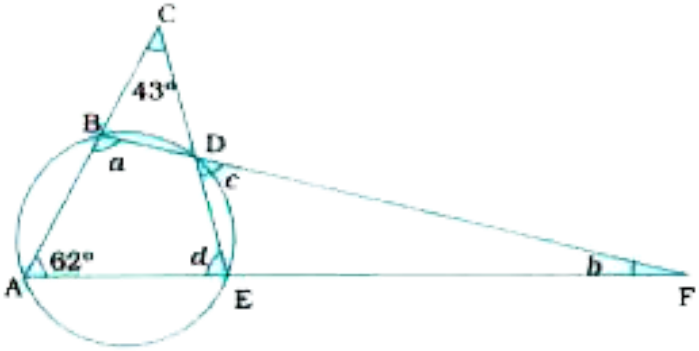
7. In the given figure, $\angle BCD = 43^\circ$ and $\angle BAE = 62^\circ$. Find the

values of a,b,c and d.



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Multiple Choice Questions Mcq S

1. In a circle with centre P. AB and CD are congruent chords. If $ANGLEpab = 40^\circ$,

THEN $ANGECPD =$ .....

A. 40°

B. 80°

C. 100°

D. 50°

Answer: C

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2. In a circle with radius 5 cm, the length of a chord lying at distance 4 cm from the centre is ..... cm.

A. 3

B. 6

C. 12

D. 15

Answer: B

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3. In a circle with radius 13 cm, the length of a chord is 24 cm. Then, the distance of the chord from the centre is ..... cm.

A. 10

B. 5

C. 12

D. 6.5

Answer: B

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4. In a circle with radius 7 cm, the length of a minor arc is always less than ..... cm.

A. 11

B. 22

C. 15

D. π

Answer: B

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5. In a circle with centre P, AB is a minor arc. Point Ris a point other than A and B on major arc $iFANGLEapb = 150^\circ$. then $\angle ARB =$

.....

A. 150°

B. 75°

C. 50°

D. 100°

Answer: B

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6. In a circle with centre P, AB is a minor arc. Point Ris a point other than A and B on major arc AB. If $\angle ARB = 80^\circ$, then $\angle APB =$ .....

A. 40°

B. 80°

C. 160°

D. 60°

Answer: C

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7. In cyclic quadrilateral $ABCD, \angle A - \angle C = 20^\circ$. Then, $\angle A =$ .....

A. 20°

B. 80°

C. 100°

D. 50°

Answer: C

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8. In cyclic quadrilateral PORS, $7\angle P = 2\angle R$.

Then,$\angle P =$ .....

A. 20°

B. 40°

C. 140°

D. 100°

Answer: B

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9. The measures of two angles of a cyclic quadrilateral are 40° and 110° Then, the measures of other two angles of the quadrilateral are .....

A. 400° and 110°

B. 50° and 100°

C. 140° and 70°

D. 20° and 120°

Answer: C

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10. In cyclic quadrilateral PQRS, $\angle SQR = 60^\circ$ and $\angle QPR = 20^\circ$. Then, $\angle QRS$=.....

A. 40°

B. 60°

C. 80°

D. 100°

Answer: D

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11. In cyclic quadrilateral ABCD, $\angle CAB = 30^\circ$ and $\angle ABC = 100^\circ$. Then, $\angle ADB =$ .....

A. 50°

B. 100°

C. 75°

D. 60°

Answer: A

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12. Equilateral Δ ABC is inscribed in a circle with centre P. Then, $\angle BPC$ = ...

A. 60°

B. 90°

C. 120°

D. 75°

Answer: C

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13. A ABC is inscribed in a circle with centre o and radius 5 cm and AC is a diameter of the circle. If AB = 8 cm, then BC = ... cm.

A. 10

B. 8

C. 6

D. 15

Answer: C

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14. In cyclic quadrilateral ABCD, $\angle A = 70^\circ$ and $\angle B + \angle X = 160^\circ$. Then, $\angle B =$ .....

A. 35°

B. 25°

C. 50°

D. 130°

Answer: C

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Sum To Enrich Remamber

1. Give an arc of a circle, complete the circle,

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

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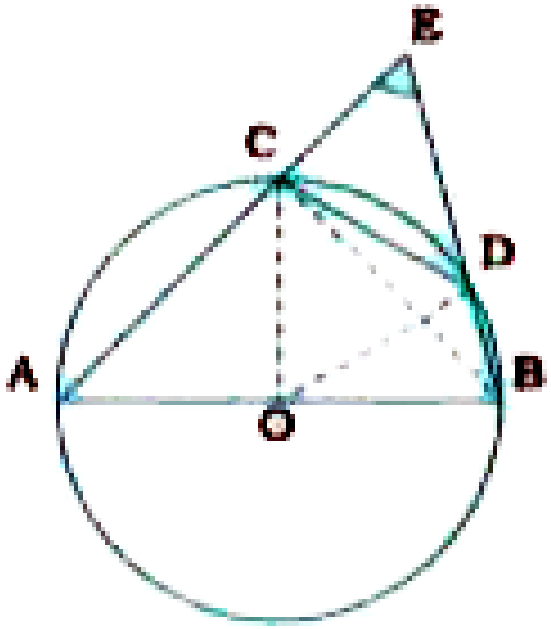
3. In the given figure, AB is a diameter of the circle, CD is chord equal to the radius of the circle, AC and BD when extended intersect at a point E. Prove that $\angle AEB = 60^\circ$.



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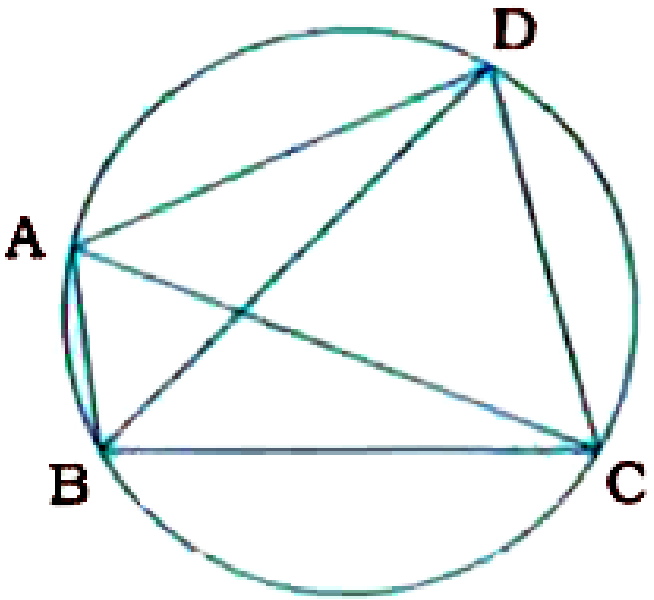
4. In the given figure ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle DBC = 55^\circ$ and $\angle BAC = 45^\circ$, find

$\angle BCD$.



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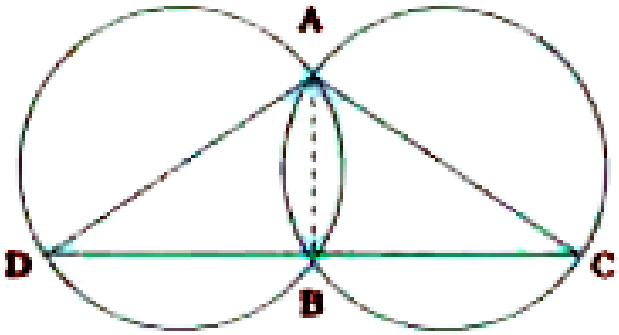
5. Two circles intersect at two points A and B

AD and AC are diameters to the two circles

Prove that B lies on the line segment DC.



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