



MATHS

NCERT - NCERT

MATHEMATICS(ENGLISH)

CIRCLES

Exercise 10.6

1. In any triangle ABC , if the angle bisector of $\angle A$ and perpendicular bisector of BC

intersect, prove that they intersect on the circumcircle of the triangle ABC .



[Watch Video Solution](#)

2. $ABCD$ is a parallelogram. The circle through A , B and C intersects CD produced at E , prove that $AE = AD$.



[Watch Video Solution](#)

3. AC and BD are chords of a circle which bisect each other. Prove that (i) AC and BD are diameters, (ii) ABCD is a rectangle



[Watch Video Solution](#)

4. Let the vertex of an angle ABC be located outside a circle and let the sides of the angle intersect equal chords AD and CE with the circle. Prove that $\angle ABC$ is equal to half the

difference of the angles subtended by the chords AC and DE at the centre.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

6. 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.



[Watch Video Solution](#)

7. The lengths 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?

A. 5cm

B. 3cm

C. 2cm

D. 4cm

Answer: B



Watch Video Solution

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



Watch Video Solution

9. Bisectors of angles A , B and C of a triangle ABC intersect its circumcircle at D , E and F respectively. Prove that the angles of the triangle DEF are $90^\circ - \frac{1}{2}A$, $90^\circ - \frac{1}{2}B$ and $90^\circ - \frac{1}{2}C$





[Watch Video Solution](#)

10. Two congruent circles intersect each other at points A and B. Through A any line segment PAQ is drawn so that P, Q lie on the two circles. Prove that $BP = BQ$.



[Watch Video Solution](#)

Exercise 10 4

1. In Figure, l is a line intersecting the two concentric circles, whose common centre is O , at the points A , B , C and D . Show that $AB = CD$.

A. $AB=BD$

B. $CD=AC$

C. $AB=CD$

D. None

Answer: C



Watch Video Solution

2. 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.

A. 5 cm

B. 4 cm

C. 3 cm

D. 6 cm

Answer: D



Watch Video Solution

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.



Watch Video Solution

4. 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.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

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.



[Watch Video Solution](#)

Exercise 10 1

1. Write the truth value (T/F) of the following with suitable reasons: A circle is a plane figure. Line segment joining the centre to any point on the circle is a radius of the circle. If a circle is divided into three equal arcs each is a major arc. A circle has only finite number of equal chords. A chord of a circle, which is twice as long as its radius is a diameter of the circle. Sector is the region between the chord and its

corresponding arc. The degree measure of an arc is the complement of the central angle containing the arc. The degree measure of a semi-circle is 180^0



[Watch Video Solution](#)

2. Fill in the blanks:

(i) The centre of a circle lies in _____ of the circle. (exterior/ interior)

(ii) A point, whose distance from the centre of a circle is greater than its radius lies in _____

of the circle. (exterior/ interior)

(iii) The longest chord of a circle is a _____ of the circle.

(iv) An arc is a _____ when its ends are the ends of a diameter.

(v) Segment of a circle is the region between an arc and _____ of the circle.

(vi) A circle divides the plane, on which it lies, in _____ parts.



[Watch Video Solution](#)

1. If diagonals of a cyclic quadrilateral are diameters of the circle through the vertices of the quadrilateral, prove that it is a rectangle



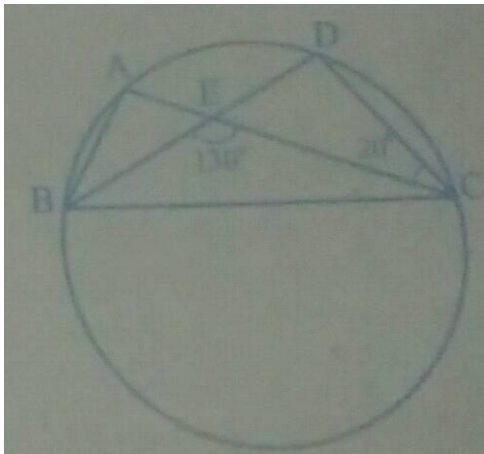
[Watch Video Solution](#)

2. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If $\angle DBC = 70^\circ$, $\angle BAC$ is 30° , find $\angle BCD$.
Further, if $AB = BC$, find $\angle ECD$.



[Watch Video Solution](#)

3. 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 $\angle BAC$.

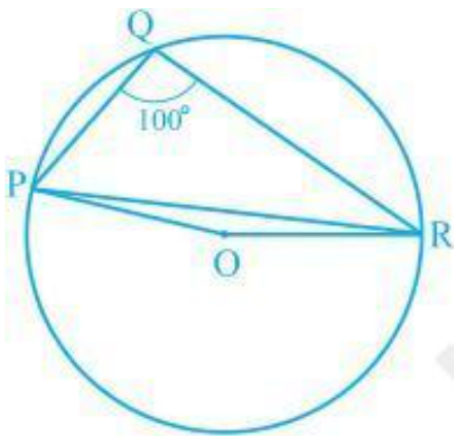


Watch Video Solution

4. In Fig. 10.38, $\angle ABC = 69^\circ$,
 $\angle ACB = 31^\circ$, find $\angle BDC$

 [Watch Video Solution](#)

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



 [Watch Video Solution](#)

6. 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.

A. 150°

B. 180°

C. 160°

D. 170°

Answer: A



Watch Video Solution

7. In Fig. 10.36, 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 $\angle ADC$.



Watch Video Solution

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

$$\angle CAD = \angle CBD.$$



Watch Video Solution

9. 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



Watch Video Solution

10. 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 Figure). Prove that $\angle ACP = \angle QCD$.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

Solved Examples

1. In Fig 10.33, ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If $\angle DBC = 55^\circ$ and $\angle BAC = 45^\circ$, find $\angle BCD$



[Watch Video Solution](#)

2. Two circles intersect at A and B and AC and AD are respectively the diameters of the

circles. Prove that C , B , D are collinear.



[Watch Video Solution](#)

3. The quadrilateral formed by angle bisectors of a cyclic quadrilateral is also cyclic.



[Watch Video Solution](#)

4. 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



[Watch Video Solution](#)

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



[Watch Video Solution](#)

6. Given an arc of a circle, complete the circle.



[Watch Video Solution](#)

Exercise 10 2

1. Prove that equal chords of congruent circles subtend equal angles at their centre.



[Watch Video Solution](#)

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



[Watch Video Solution](#)

Exercise 10 3

1. Draw the circles of different radii. How many points, these circles can have in common ?

What is the maximum number of common points ?



[Watch Video Solution](#)

2. If two circles intersect in two points, prove that the line through the centres is the perpendicular bisector of the common chord.



[Watch Video Solution](#)

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



Watch Video Solution