



# MATHS

**BOOKS - CALCUTTA BOOK HOUSE**

**MATHS (BENGALI ENGLISH)**

**THEOREMS RELATED TO CIRCLE**

**Example Very Short Answer Type Questions Mcqs**

1. The length of tow chords AB and CD of the circle with centre at O are equal . If

$\angle AOB = 60^\circ$  , then the value of  $\angle COD$  is .

A.  $40^\circ$

B.  $30^\circ$

C.  $60^\circ$

D.  $90^\circ$

**Answer: C**



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2. The radius of the circle is 13 cm and one of its chord is 10 cm. Then the distance fo the chord form the centre is -



A.  $12.5\text{cm}$

B.  $\sqrt{69}\text{cm}$

C. 12 cm

D. 24 cm

**Answer: C**



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3. AB and CD are two chords of equal length of the circle with centre at O. The distance of the chord AB from the centre O is 4 cm. Then the distance of chord CD from the center O is

A. 2 cm

B. 4 cm

C. 6 cm

D. 8 cm

**Answer: B**



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4. The length of each of two parallel chords AB and CD is 16 cm. If the radius of the circle be 10 cm, the distance between the two chords is .

A. 12 cm

B. 16cm

C. 20 cm

D. 5 cm

**Answer: A**



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5. The centre of two concentric circles is  $O$ . A straight line intersects one of the circles at  $A$  and  $B$  and the other circle at  $C$  and  $D$  respectively. If  $AC = 5$  cm, then the length of  $BD$  is [GP-X]

A. 2.5 cm

B. 5 cm

C. 10 cm

D. None of these

**Answer: B**



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## Example Short Answer Type Questions

1. Two equal circles of radius 10 cm intersect each other and the length of their common

chord is 12 cm . Find the distance between the centre of the circle .



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2. AB and AC are two equal chords of a circle having the radius of 5 cm . The centre of the circle is situated at the outside of the triangle ABC.If  $AB = AC = 6$  cm, then calculate the length of the chords BC.



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3. The length of two chords AB and CD of a circle with its centre O are equal . If  $\angle AOB = 60^\circ$  and  $CD = 6\text{ cm}$  then calculate the length of the radius of the circle .



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4. P is any point in a circle with its centre O . If the length of the radius is 5 cm and  $OP = 3\text{ cm}$  then determine the least length of the chord passing through the point P .



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5. Two circles with their centres at P and Q intersect each other, at the points A and B. Through the point A, a straight line parallel to PQ intersects the two circles at the points C and D respectively. If  $PQ = 5 \text{ cm}$ , then determine the length of CD.



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**Example Long Answer Type Questions**

1. The length of the radius of circle is 5 cm and length of its chord AB is 8 cm . Calculate the distance of the chord AB form the centre O.



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2. The length of the diameter of a circle with its centre at O is 26 cm. The distance of the chord PQ form the point O is 5 cm . Calculate the length of th chord PQ.



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3. If the length of a chord of a circle is 48 cm and the distance of this chord from the centre is 7 cm, then find the length of the chord, the distance of which from the centre is 20 cm.



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4. In the circle of adjoining figure with its centre at  $O$ ,  $OP \perp AB$ , if  $AB = 6$  cm and  $PC = 2$  cm then find the length of radius of the circle.



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5. The two circles with centre X and Y intersect each other at the points A and B, A joined with the mid -point S of XY and the perpendicular on SA through the point A is drawn which intersect the two circles at the point P and Q .Prove that  $PA = AQ$ .



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6. The two parallel chords AB and CD with length of 10 cm and 24 cm in a circle situated

on the opposite side of the centre. If the distance between two chords AB and CD is 17 cm, calculate the length of the radii of the circle



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7. The centres of two circles are P and Q. They intersect at the points A and B. The straight line parallel to the line segment PQ through the point A intersects the two circles at the points C and D. Prove that  $CD = 2PQ$



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8. Assume that each born child is equally likely to be a boy or a girl. If a family has two children, what is the conditional probability that both are girls given that

(i) the youngest is a girl, (ii) at least one is a girl?



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**9.** If the angle - bisector of two intersecting chords of a circle passes through its centre , then prove that the chords are equal .



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**10.** Write with proof which of the chords passing through any point in a circle will be the least .



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## Example B Write True Or False

1. Only one circle can be through three collinear points .



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2. ABCD and ABCEA are two same circles.



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3. If two chords AB and AC of a circle with center at O lie in the opposite side of the radius OA, then  $\angle OAB = \angle OAC$



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### Example C Fill In The Blanks

1. If the ratio of length of two chords PQ and RS of the circle with centre at O be 1 : 1 then  $\angle POQ : \angle ROS = \underline{\hspace{2cm}}$ .



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2. The perpendicular bisector of any chord of a circle passes through the \_\_\_\_\_ of that circle .



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## Exercise 1 Multiple Choice Questions

1. The length of the greatest chord of the circle , the radius of which is 2.5 cm is

A. 2.5 cm

B. 5 cm

C. 3.5 cm

D. 1.25 cm

**Answer: A**



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2. If the lengths of two parallel chords are 16 cm and 30 cm respectively and the radius of

the circle is 7 cm , then distance of two chords  
is

A. 7 cm

B. 5 cm

C. 14 cm

D. 8 cm

**Answer: B**



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3. The length of the chords  $AB$  and  $CD$  of the circle with centre at  $O$  equal . If  $\angle AOB = 45^\circ$  , then  $\angle COD$  will be.

A.  $40^\circ$

B.  $30^\circ$

C.  $45^\circ$

D.  $60^\circ$

**Answer: C**



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4. The radius of a circle is 5 cm and length of a chord of the circle is 6 cm . Then the distance of the chord from centre is

A. 5.5cm

B. 3.5cm

C. 2.5 cm

D. 4 cm

**Answer: D**



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## Exercise 1 Write True Or False

1. Diameter is the greatest chor of a circle .



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2. If the radii of two circles be equal , they are known as concentric circlce.



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## Exercise 1 Fill In The Blanks



1. If the centre of some circles be the same , then they are called \_\_\_\_\_ circle.



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2. The total number of diameters of a circle is 1  
(b) 2 (c) 4 (d) uncountable number



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3. If any chord of a circle divides into equal parts, then each part is called a \_\_\_\_\_.



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## Exercise 1 Short Answer Type Questions S A

1. AB and CD are two equal chords of a circle with centre at O. If the distance of AB from O be 2 cm, then find the distance of CD from O.



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2. The length of each of two parallel chords AB and CD is 10 cm. If the radius of the circle be 13 cm then, find the distance between the two chords.



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3. The centre of two concentric circles is O. A straight line intersects one circle at P and Q and the other at R and S. If  $PR = 4$  cm, then find the length of QS.



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4. Two each circles of radius 13 cm intersect each other and the length of their common chord is 10 cm. find the distance between the centre of the circle.



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5. The two chords AB and CD of a circle with centre at O are equal. If  $\angle AOB = 60^\circ$  and CD = r cm , then find the radius of the circle.



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6. AB is any chord of a circle. If  $AB = r$  cm and the distance of the chord from the centre be  $d$  cm, where  $r = \sqrt{5d}$ , then find the radius of the circle.



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7. AB and CD are two chords of a circle with centre at O , the ratio of lengths of which is 4:5. If the perpendicular distance of AB from O

be  $d$  cm, then perpendicular distance of  $CD$  from  $O$ .



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**8.** The perpendicular distance of chord of  $r$  cm length is  $d$  cm from the centre. If  $r : d = \sqrt{5} : 1$  then find the radius of the circle.



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**Exercise 1 Long Answer Type Question**

1. Prove that diameter is the greatest chord of a circle.



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2. Prove that the two different circle can never intersect at more that two point .



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**3.** Prove that the perpendicular bisector of any chord of a circle passes through the centre of the circle .



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**4.** Two circles intersect each other at A and B and a straight line parallel to AB intersects the circles at C,D,E,F. Prove that  $CD = EF$ .



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5. Prove that the line segment obtained by joining the two circles bisects the common chord of the circles at right angle.



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6. If two intersecting chords of a circle produce equal angles with the straight line obtained by joining the point of intersection and the centre, then prove that the chords are equal.



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7. Two equal line segments PA and PB are drawn from external point P of a circle . If the distance of PA from the centre of the circle be 3, cm then find the distance of PB from the centre .



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8. Determine the locus of the mid-points of equals chords of a circle .



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9. Prove that between two chords of a circle, the chord which is at a greater distance from the centre is lesser in length than the chord which is at a closer distance from the centre.



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