SUBJECT-MATHEMATICS, CLASS-IX
CIRCLES
## WORKSHEET(BASIC)

VeryShortAnswer Type(1mark)

1.What is the longest chord of a circle?

2.What is the length of the chord of a circle of radius 10cm if the perpendicular distance between the centre and the chord is 6cm?

3.How many circles can be drawn through any three non collinear points?

4.The measure of the angle subtended by the diameter of a circle in the circle is------------.

5.In figure, if $\angle ABC = 20°$, then $\angle AOC$ is equal to

a)20°   (b) 40°   (c) 60°   (d)10°
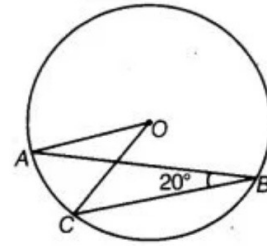
6.The line perpendicular to two parallel chords may passes through the centre.(T/F)

Give reason.

7.The sum of the measures of the exterior angles of a cyclic quadrilateral is ------.

8.In a circle two chords AB and AC are present at distance of 3cm and 4.5cm from the centre respectively.Which chord has greater length?

9. In a circle PQ is the diameter.R is a point on the circle such that PR=QR.

What is the measure of $\angle$PQR?

10.In a circle ,if the length of a chord is equal to it's radius,what is the measure of the angle subtended by the chord at the centre?

11. If AOB is a diameter of a circle and C is a point on the circle, then $AC^2 + BC^2 = AB^2$. Justify your answer.

12. In Fig. 10.36, A,B and C are three points on a circle with centre O such that ∡BOC = 30° and ∡AOB = 60°. If D is a point on the circle other than the arc ABC, find ∡ADC.
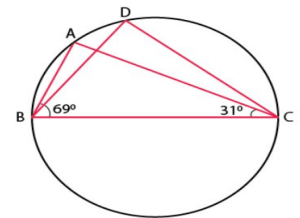
13. Prove that the angle subtended in a semicircle is right angle.

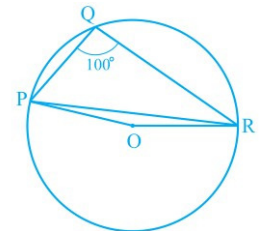14. Construct a circle taking three non collinear points P,Q and R.

15. Prove that the line drawn perpendicular to the chord bisects the chord at the point of contact.

Short Answer Type-II(3marks)

16. In Figure, ∠ABC = 69°, ∠ACB = 31°, find ∠BDC.

17. In Figure, ∠PQR = 100°, where P, Q and R are points on a circle with centre O. Find ∠OPR.

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

19. 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

20. Prove that a cyclic parallelogram is a rectangle.

21. 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.

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

23. 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

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

Long Answer type(4marks).

25. 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.

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

27. 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 6m each, what is the distance between Reshma and Mandip?

28. 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.

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

30. If two equal chords intersect prove that the part of one chord is equal to the part of another chord.

WORKSHEET (STANDARD)

Very Short Answer (1mark)

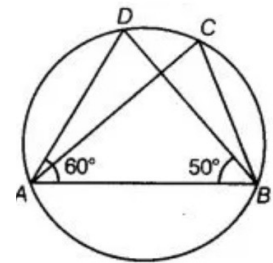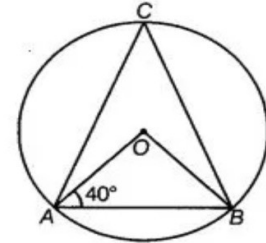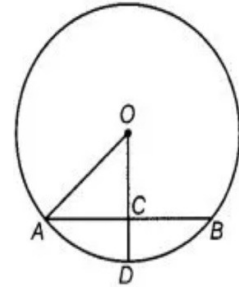1.In figure, if OA = 5 cm, AB = 8 cm and OD is perpendicular to AB, What is the length of CD ?

a) 2 cm   (b) 3 cm(c) 4 cm   (d) 5 cm

2.If AB = 12 cm, BC = 16 cm and AB is perpendicular to BC, then the radius of the circle passing through the points A, B and C is

(a) 6 cm   (b) 8 cm   (c) 10 cm   (d) 12 cm

3.In figure, if $\angle OAB = 40°$, thenwhat is the measure of $\angle ACB$?

4.In figure, if $\angle DAB = 60°$, $\angle ABD = 50°$, then find $m\angle ACB$

Short Answer Type-I(2 marks)

5. Two circles intersect at A and B.AD and AC are diameters.Prove that B lies on CD.

6. If BM and CN are the perpendiculars drawn on the sides AC and AB of the ∆ABC, prove that the points B, C, M and N are concyclic.

7.If the perpendicular bisector of a chord AB of a circle PXAQBY intersects the circle at P and Q, prove that arc PXA = arc PYB.

Short Answer Type-II(3 marks)

8.Prove that the quadrilateral formed by the bisectors of internal angles of a quadrilateral, is cyclic

9. Three points A,B and C are located on a circle which are equidistant from one another.If the radius of the circle is 20m the calculate the length of AB.

10.The circumcentre of ∆ABC is 0. Prove that $\angle OBC + \angle BAC = 90°$.

11. ABCD is such a quadrilateral that A is the centre of the circle passing through B, C and D. Prove that $\angle CBD + \angle CDB = \frac{1}{2} \angle BAD$.
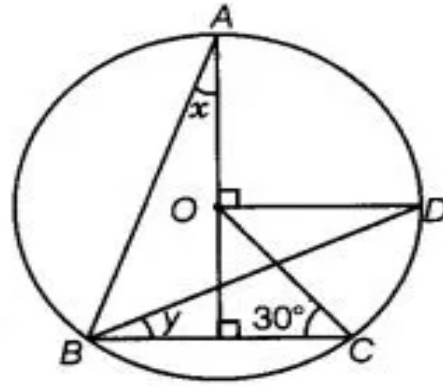
12. O is the circumcentre of the $\triangle ABC$ and D is the mid-point of the base BC. Prove that $\angle BOD = \angle A$.

13. Two chords AB and AC of a circle subtends ngles equal to 90° and 150°, respectively at the centre.

Find $\angle BAC$, if AB and AC lie on the opposite sides of the centre.

14. If the non parallep sides of a trapezium are equal in length it is cyclic.

15. Prove that that the opposite angles of a cyclic quadrilateral are supplementary.

Long Aswer type(4marks)

16. A, B and C are three points on a circle. Prove that the perpendicular bisectors of AB, BC and CA are concurrent.

17. AB and AC are two equal chords of a circle. Prove that the bisector of the angle BAC passes through the centre of the circle.

18. Provethattheanglebisectorsoftheanglesformedbyproducingoppositesidesofacyclicquadri lateral(theyarenot parallel)intersectat90.

19. Two equal chords AB and CD of a circle when produced intersect at a point P. Prove that PB = PD.

20. In figure, O is the centre of the circle $\angle BCO = 30°$. Find x and y.

WORSHEET (ADVANCE)

Very Short Answer(1mark)

1.AD is a diameter of a circle and AB is a chord. If AD = 34 cm, AB = 30 cm, the distance of AB from the centre of the circle is
(a) 17 cm   (b) 15 cm   (c) 4 cm   (d) 8 cm

Short Answer Type-I(2marks)

2. Prove that if a pair of opposite sides of a cyclic quadrilateral are equal then the diagonals are equal.

Short Answer Type-II(3marks)

3.In the figure AC is the diameter of the circle of centre O AC
BD is perpendicular to AC.Write the measures of a,b,c and d.

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.

5.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, find the radius of the circle.
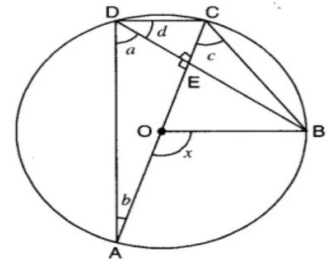
6.If P, Q and R are the mid-points of the sides BC, CA and AB of a triangle and AD is the perpendicular from A on BC, prove that P, Q, R and D are concyclic.

Long Answer type (4marks)

7. 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 $90° - (\frac{1}{2})A$, $90° - (\frac{1}{2})B$ and $90° - (\frac{1}{2})C$.

8. 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.

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

10. AB and AC are two chords of a circle of radius r such that AB = 2AC. If p and q are the distances of AB and AC from the centre, prove that $4q^2 = p^2 + 3r^2$.

****