MATHS

BOOKS - V PUBLICATION

Circles

Question Bank

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1. Prove that the line joining the centres of two intersecting circles is the perpendicular

bisector of the line joining the points of intersectíon.

2. The picture on the right shows two circles centred on the same point and a line intersecting them.Prove that the parts of the line between the circles on either side are equal.

3. The figure shows two chords drawn on either sides of a diameter. What is the length of the other chord?

4. A chord and the diameter through one of its ends are drawnin a circle. A chord of the same inclination is drawn on the other side of the diameter. Prove that the chords are of the same length.

5. The figure shows fwo chords drawn on either sides of a dlameter:How much is the angle the other chord makes with the diameter?

6. Prove that the angle made by two equal chords drawn from a point on the circle is bisected by the diameter through that point.

7. In the figure AB is a chord and CD is the diameter perpendicular to it. Prove that ABC is, an Isosceles triangle.

8. In the figure, Ois the centre of the circle and AB, CD are chords with angle O A B=angle 0 C D Rrove that A B=C D.

9. Prove that chords of the same length in a circle are at the same distance from the centre.

10. Two chords intersect at a point on a circle and the diameter through this point bisects the angle between the chords. Prove that the chords have the same length.

11. In the picture on the right, the angles between the radii and the chords are equal.Prove that the chords are of the same length.

12. In the figure, O is the center of the circle and A B and CD are chords with AB=CD Prove

that angle < OAB=< OCD

13. In the figure, Ois the centre of the circle and AB, CD are chords with angle O A B=angle 0 C D Rrove that A B=C D.

14. In a circle, a chord 1 centimetre away from the centre 6 cemtimetres long. What is the

length of a chord 2 centimetres away from the centre?

15. In a circle. of radius 5 centimetres, two parallel chords of lengths 6 and 8 centtimetres are drawn on either side of a diameter. What is the distance between them? If parallel chords of these Iengths are drawn on the same side of a diameter, what would be the distance. between them?

16. The bottom side of the quadrilateral in the picture is a diameter of the circle and the top side is a chord parallel to it. Calculate the area of the quadrilateral.

17. 'In a circle, two parallel chords of lengths 4 and 6 centimetres are 5 centimetres apart. What is the radius of the circle?

18. What is the length of ä chord which is 3 centimetres away from the centre of a. circle of radius 5 centimetres?

19. Find the radius. of the circle shown below.

20. If a trapezium ABCD is cut out from a circle, then AB=24 cm ,CD=18cm and the radius of the circle is. 15 cm. If A B and C D are on the same side of the Centre, what is the area of the trapezium? If A B and C prime are on either side of the center, what is the area of the trapezium?

21. In a circle of radius 25 centimetres, the lengths of two parallel chord's are 30cm and

40 cm.

If the chords are on the same side of the diameter, what is the distance between? If the chords are on either of the diameter, what is the distance between them?

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22. In the figure, BC is the diameter of the circle. angle ABC=angle B C D, BC=10cm,AB=6 cm , what is the distance between the chords A B and CD.

23. In a circle, a chord 20 centimetres away from the centre 30 centimetres long. What is the length of a chord 7 centimetres 'away from the centre?

24. In the figure, A B is the diameter of the circle and C D is a chord parallel to it. If A

B=20cm, C D=12 cm. What is the distance between CD and the center of the circle?

25. Two parallel chords in a circle of diameter 30 cm have lengths 24cm and 18 .cm

If the chords are on the same side of the centre, what is the distance between them?

If the chords are on either side-of the centre, what is the difference between them?

26. Draw three triangles with lengths of two sides 4 and 5 centimetres and the angle between them 60°, 90°, 120°. Draw the circumcircle of each. (Note how the position of the circumcentre changes).

27. The equal sides of an isosceles triangle are 8 centimetres long and the radius of its

circumcircle is 5 centirnetes. Calculate the length of its third side.

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28. Find the relation between the length of a side and the circumradius of an equilateral triangle.

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29. Draw triangle A B C with A B=6 cm,angle A=30^circ angle B=50^circ and draw its circumcircle.

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30. Draw triangle A B C with A B=6.6 cm, B C=6cm, angle B=50^circ and draw its circumcircle.

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31. Drawtriangle A B C with A B=5.5 cm, B C=5 cm A C=6cm and draw its circumcircle.

32. Draw triangle DEF with DE=4cm}, EF=5 angle D=90^circ and draw its circumcircle.

33. What is the area of the circumcircle of an equilateral triangle of sides 6 centimetres.

34. Draw triangle P Q R with P Q=5cm, angle P=35^irc and angle Q=40^circ and draw its circumcircle.

35. In the figure, O is the center of the circles. Radius of small circle is 13 cm and the distance from the center to the chord CD is 5 cm. If AC=3 cm

a) Calculate the length of CD. b) Calculate the length of AB.

36. In the figure, O is the centre of the circle and the distance between the point A, B is 4

centimetres and C D=1 centimetre

a) Taking r as radius, find the distance OD.

b) Find the relationship between the fengths OD, OB, DB.

c) Calculate the radius.

37. In the fig AB, CDare two parallel chords of the circle with centre O and the distance between them is 2 centimetres,A B=8 centimetres. CD=4 centimetres.

a) Write the length of. OQ, if OP=x.

b) Compute the value of x. c) Find the radius of the circle. d) Calculate the area of the circle.

38. In the figure chord GD is parallel to the diameter AB. Since the distance from Q to C D is 1 cm the length of the chord is 14 cm. If the distance from the top of the semicircle (Q) to CD is 5 cm, what is the length of the .chord?If

the length of the chord is 40 cm, What is the distance from the top of the semicircle to CD?

39. In the triangleABC, AB=7 cm, angle A=40^circ, angle B=50^circ . Draw. the triangle and also draw the circumcincle.

40. In triangle ABC,angle B=90,AB=12 centimetres. BC=5 centimetres. What is the circum radius of triangle ABC.

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41. Draw triangle A B C with $AB^{\prime}=6$ centlmetres angle $A=50^{\circ}$, angle $B=60^{\circ}$. Draw its circumcircle.

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42. In the figure 0 is the centre of the circle. OB=5 cm. Distance from 0 to chord AB is 3 cm. Find the length of A B.

43. In the figure 0 is the center of the circle. AB and PQ are two chords at equal distance from the center. A B=12 cm, OC=8 cm is the perpendicular distance from center to AB

a) What is the length of PQ?

b) Calculate the radius of the circle.

44. The side of an equilateral triangle is 4 centime- -tres. Draw its clrcumcircle.

45. In the figure,O is the centre of both the circles. Radius of small circle is 13 centimetres and the distance from the centre to the chord CD is 5 centimetres. If A C=3 centimetres

a) Calculate the length of CD.

b) Calculate the length ofAB.

46. In the circle, A B and C D are two equalchords of the circle. They are.mutally perpendicular also

a) If the distance from the centre to the chord AB is d, what is the distance from the centre to the chord CD? b) What type of a quadrilateral is OQSP? c) Prove that B'S = DS.

47. Draw the triangle with, two sides 6 centimetres, 8 centimentres and the angle between them is40^circ. Draw its circumcircle and measure its radius.

48. In the picture below ,C is the midpoint of the chord A B and CD is perpendicular toAB IfAB=4 cm and CD=1 cm

a) What is the length of OC ?

b) Find a relation between O C, O B and CB ?

c) What is the radius of the circle?

49. In the circle shown along side, the chords AB and AC are of the same length. The bisector of angle A intersects the chord BC at Dand meets the circle. at E

i) Prove that D is the midpoint of B C. ii) Prove that AE is the diameter of the circle

50. In the semicicle shown, the top chord is parallel to the diameter. What is its length

i) What is the length of such a chord 2 centimetres down from the top of the semicircle?

ii) Is the length of such a chord propor- tionial to the distance from the top? Write the reason.

51. In the figure, O is the circumcircle of the triangle ABC,AB=AC and the line OD is perpendicular to the side B C. If BC= 16 centimetres and OD=6 centimetres.

i) What is the circumradius?

ii) Calculate the length of the sides AB and AC.

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52. In a circle of radius 13 centimetres two parallel chords of lengths 10 cm and 24 are

drawn on the same side of the diameter, what would be the distance between them?

53. In the figure, two circles drawn with centres A and B respectively. They Intersect at P and Q. Prove that AB is the perpiendicular bisector of PQ.

54. In the figure, O is the center of the circle and A B and CD are chords with AB=CD Prove that angle < OAB=< OCD

55. The diameter of circle is 30 cm. What is the length of a chord 9cm away from the center?

56. Draw A B C with AB=3 cm BC=5cmangle A=90^circ and draw its circumcircle.

57. In a circle of radius 13 centimetres two parallel chords of lengths 10 cm and 24 are drawn on the same side of the diameter, what would be the distance between them?