MATHEMATICS
WORKSHEET_290823
CHAPTER-09 CIRCLES

SUBJECT: MATHEMATICS **MAX. MARKS : 40**

CLASS : IX **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

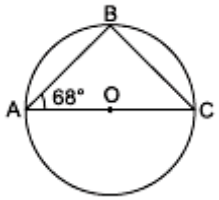
SECTION – A

Questions 1 to 10 carry 1 mark each.

1. Given a circle of radius 5 cm and centre O. OM is drawn perpendicular to the chord XY. If OM = 3 cm, then length of chord XY is

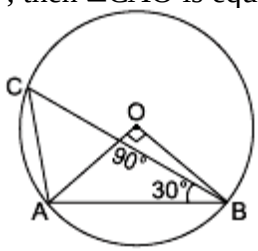
(a) 4 cm (b) 6 cm (c) 8 cm (d) 10 cm

2. In the given figure, O is centre of the circle, ∠BAO = 68°, AC is diameter of the circle, then measure of ∠BCO is



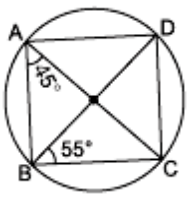
(a) 22° (b) 33° (c) 44° (d) 68°

3. In figure, ∠AOB = 90° and ∠ABC = 30°, then ∠CAO is equal to



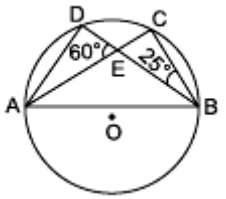
(a) 30° (b) 45° (c) 90° (d) 60°

4. In the given figure, ∠DBC = 55°, ∠BAC = 45° then ∠BCD is



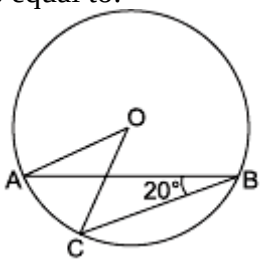
(a) 45° (b) 55° (c) 100° (d) 80°

5. In the given figure, O is the centre of the circle, ∠CBE = 25° and ∠DEA = 60°. The measure of ∠ADB is



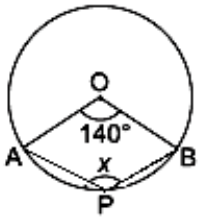
(a) 90° (b) 85° (c) 95° (d) 120°

6. In figure, if ∠ABC = 20°, then ∠AOC is equal to:



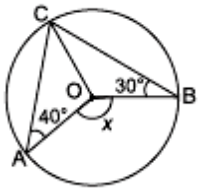
(a) 20° (b) 40° (c) 60° (d) 10°

7. In the given figure, value of x is



(a) 140° (b) 70° (c) 110° (d) 280°

8. In the given figure, O is the centre of the circle. The value of x is

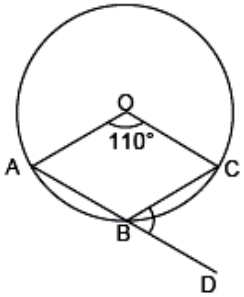


(a) 140° (b) 70° (c) 290° (d) 210°

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

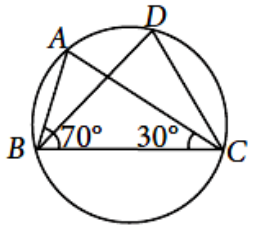
(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): If O is the centre of the circle as shown in figure, then ∠CBD = 55°.



Reason (R): Exterior angle of cyclic quadrilateral is equal to interior opposite angle

10. Assertion (A): In the given figure, ∠ABC = 70° and ∠ACB = 30°. Then, ∠BDC = 80°.

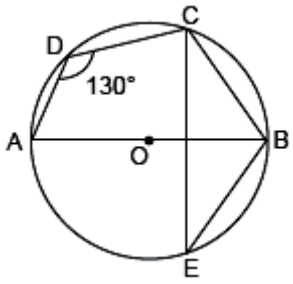


Reason (R): Angles in the same segment of a circle are equal.

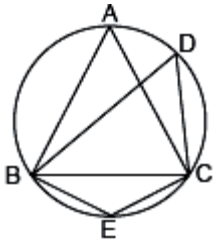
SECTION – B

Questions 11 to 14 carry 2 marks each.

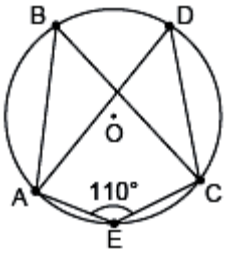
11. In the given figure, ∠ADC = 130° and chord BC = chord BE. Find ∠CBE.



12. In the given figure, ΔABC is equilateral. Find ∠BDC and ∠BEC.



13. In the given figure, ABCE is a cyclic quadrilateral and O is the centre of circle. If ∠AEC = 110°, then find (a) ∠ABC (b) ∠ADC

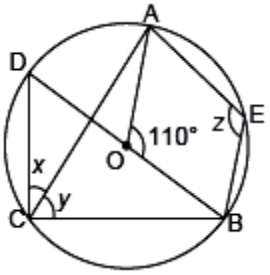


14. If two chords of a circle are equally inclined to the diameter passing through their point of intersection, prove that the chords are equal.

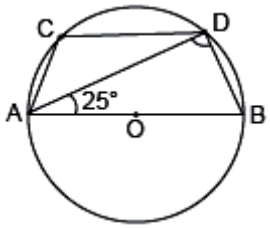
SECTION – C

Questions 15 to 17 carry 3 marks each.

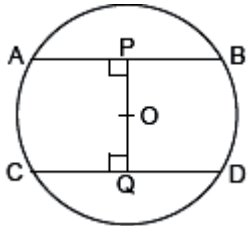
15. In the given figure, O is the centre of the circle and ∠AOB = 110°, find the value of *x*, *y* and *z*.



16. In the given figure, AB is diameter of the circle with centre O and CD || AB. If ∠DAB = 25°, then find the measure of ∠CAD.



17. In the given figure, O is the centre of the circle with radius 5 cm. OP ⊥ AB, OQ ⊥ CD, AB || CD, AB = 6 cm and CD = 8 cm. Determine PQ.



SECTION – D

Questions 18 carry 5 marks.

18. Prove that the angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.

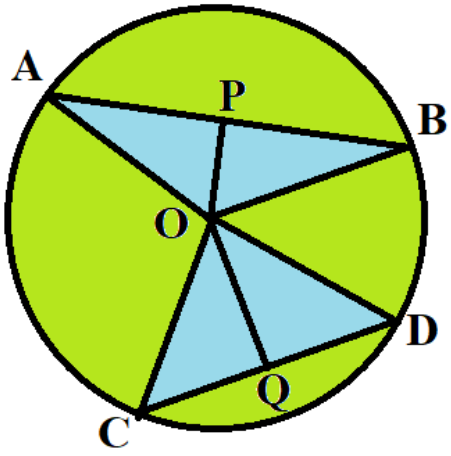
OR

In a circle of radius 18 cm, AB and AC are two chords such that AB = AC = 12 cm. Find the length of chord BC.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Aditya seen one circular park in which two triangular ponds are there whose common vertex is the centre of the park. After coming back to home, he tried to draw the circular park on the paper. He draws a circle of radius 10 cm with the help of a compass and scale. He also draws two chords, AB and CD in such a way that the perpendicular distance from the center to AB and CD are 6 cm and 8 cm respectively. Now, he has some doubts that are given below.



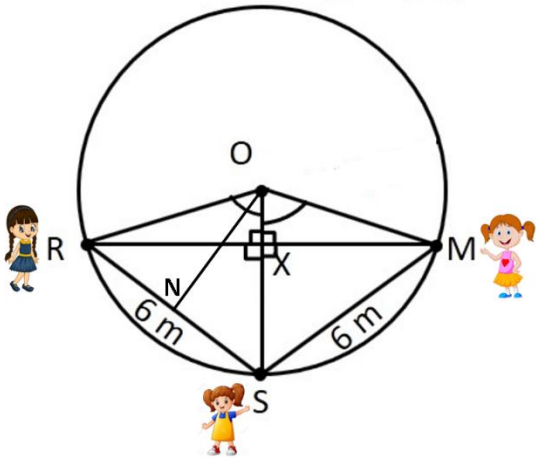
(i) Show that the perpendicular drawn from the Centre of a circle to a chord bisects the chord using any one triangle. (2)

(ii) What is the length of CD? (2)

OR

(ii) What is the length of AB? (2)

20. 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. The distance between Reshma and Salma and between Salma and Mandip is 6m each. In the given below figure Reshma's position is denoted by R, Salma's position is denoted by S and Mandip's position is denoted by M.



(i) Find the area of triangle ORS. [2]

(ii) What is the distance between Reshma and Mandip? [2]

OR

(ii) If BC is a diameter of a circle of centre O and OD is perpendicular to the chord AB of a circle, show that CA = 2OD. [2]