

MATHEMATICS
WORKSHEET_240526
CHAPTER-05 I'M UP AND DOWN AND ROUND AND ROUND

SUBJECT: MATHEMATICS
CLASS : IX

MAX. MARKS : 40
DURATION : 1½ hrs

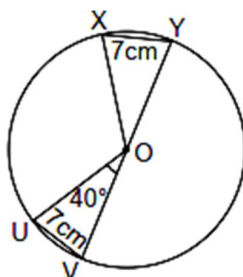
General Instructions:

- (i). All questions are compulsory.
- (ii). This question paper contains 20 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

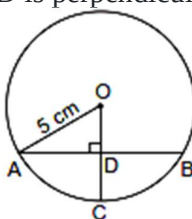
Questions 1 to 10 carry 1 mark each.

1. Given below is a circle with centre O.

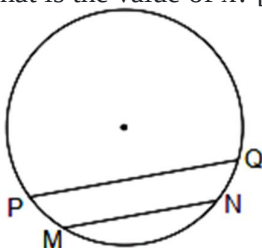


What is the measure of $\angle XOY$?

- (a) 40° (b) 140° (c) 80° (d) 90°
2. If $\angle A + \angle C = 180^\circ$ in quadrilateral ABCD, then ABCD is:
- (a) A parallelogram (b) A trapezium (c) A cyclic quadrilateral (d) A rhombus
3. In figure, If $OA = 5$ cm, $AB = 8$ cm and OD is perpendicular to AB. Then CD is equal to

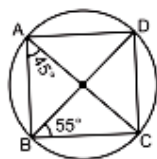


- (a) 2 cm (b) 3 cm (c) 4 cm (d) 5 cm
4. In a circle of radius 13 cm. PQ and MN two chords are of length 24 cm and x cm respectively. The distance between the chords is 7 cm. What is the value of x? [Understanding and Application]

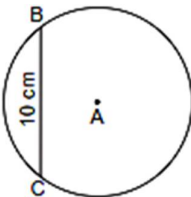


- (a) 10 cm (b) 5 cm (c) 11 cm (d) 6 cm

5. In the given figure, $\angle DBC = 55^\circ$, $\angle BAC = 45^\circ$ then $\angle BCD$ is
 (a) 45° (b) 55° (c) 100° (d) 80°



6. Given a circle with centre O and smallest chord AB is of length 3 cm, longest chord CD is of length 10 cm and chord PQ is of length 7 cm, then radius of the circle is
 (a) 1.5 cm (b) 6 cm (c) 5 cm (d) 3.5 cm
7. Two chords subtend angles 60° and 80° respectively at the center. Which chord is longer?
 (a) Chord with 60° (b) Chord with 80° (c) Both equal (d) Cannot be determined
8. Given below is a circle with centre A and chord BC.



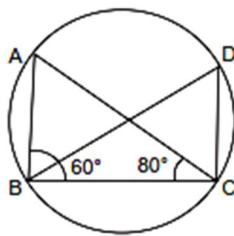
If radius of the chord is 13 cm, what is distance of the chord from the centre?

- (a) 10 cm (b) 13 cm (c) 12 cm (d) 5 cm

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):** In the given figure, $\angle ABC = 60^\circ$ and $\angle ACB = 80^\circ$. Then $\angle BDC = 40^\circ$



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

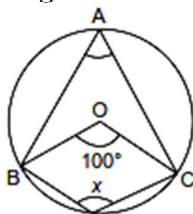
10. **Assertion (A):** The longest chord of a circle is a diameter of the circle.

Reason (R): Diameter of the circle always passes through the centre of a circle.

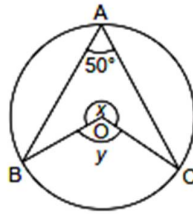
SECTION – B

Questions 11 to 14 carry 2 marks each.

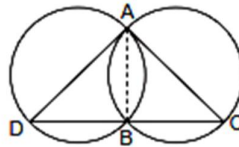
11. If $\angle BOC = 100^\circ$, then find x from the given figure.



12. Find x in the given figure.



13. Two circles intersect at two points A and B. AD and AC are diameters of the two circles. Prove that B lies on the line segment DC.



14. Find the radius of a circle passing through points A and B if the distance between A and B is 6 cm and the center lies on the perpendicular bisector at a distance 4 cm from midpoint of AB.

SECTION – C

Questions 15 to 17 carry 3 marks each.

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

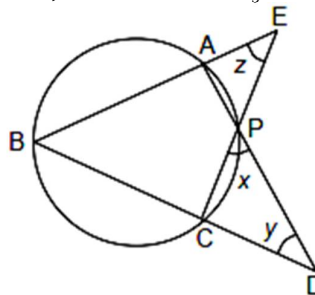
16. An isosceles triangle $\triangle ABC$ is inscribed in a circle with diameter AD . If $AB = AC$, prove that AD is the angle bisector of $\angle BAC$.

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

SECTION – D

Questions 18 carry 5 marks.

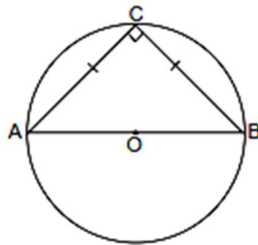
18. In the given figure, if $y = 32^\circ$ and $z = 40^\circ$, determine x . If $y + z = 90^\circ$, prove that $x = 45^\circ$.



SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Darts is a precision game that tests your accuracy and technique. The game involves throwing darts at a target board with a level of precision that will help you score better than your opponents. Three children were playing dart game to improve their concentration and threw dart on target board with radius 10 cm and centre O. Darts land on target board at positions A, B and C respectively. They drew lines to join AB, BC and CA and got a triangle shaped figure such that $AC = BC$.



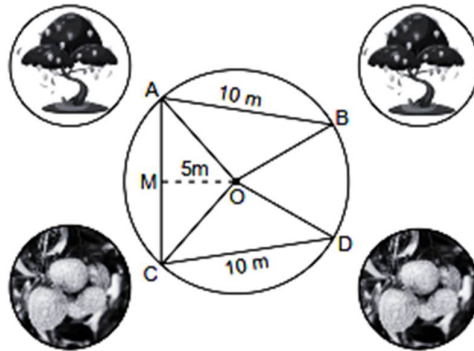
Based on the above information answer the following questions:

- (i) At what distance dart B is landed from the location of dart A?
- (ii) What type of triangle is formed by all three darts on the target board?
- (iii) (a) What is the measure of reflex $\angle AOB$?

OR

- (iii) (b) State one property of the circle used to measure $\angle ACB$?

- 20.** A farmer has a circular garden as shown in the picture. He has different types of trees, plants and flower plants in his garden. In the garden, there are two mango trees A and B at a distance $AB = 10$ m. Similarly, the garden has two Litchi trees at the same distance of 10 m as shown at C and D. AB subtends $\angle AOB = 80^\circ$ at centre O. The perpendicular distance of AC from centre is 5 m and radius of garden is 13 m.



Based on the above information answer the following questions:

- (i) What is the value of $\angle COD$?
- (ii) What is the distance between mango tree A and Litchi tree C?
- (iii) (a) If $\angle BOD = 70^\circ$ then show that $\angle CAB = 75^\circ$?

OR

- (iii) (b) What is the value of $\angle OCD$?

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