

Maxprap. Chapter wise Series Class 10th -Circles

Class : 10th

Subject: Mathematics

Max. Marks : 50

Duration : 2 Hrs

Sections: A (MCQs), B (Short Answer-I), C (Short Answer-II), D (Long Answer), E (Case-Based).

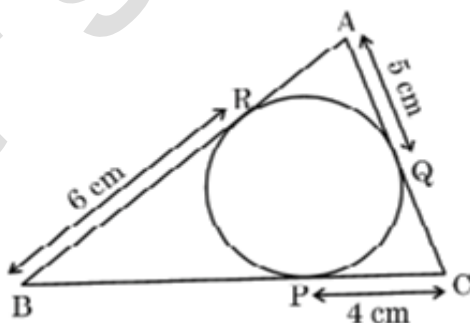
General Instructions:

- All questions are compulsory.
- This question paper contains 23 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 5 questions of 2 marks each. Section C comprises of 4 questions of 3 marks each. Section D comprises of 2 question of 5 marks each and Section E comprises of 2 Case Study Based Questions of 4 marks each.
- There is no overall choice.
- Use of Calculators is not permitted.
- Draw neat figures wherever required. Take $\pi = 22/7$, wherever required if not stated.

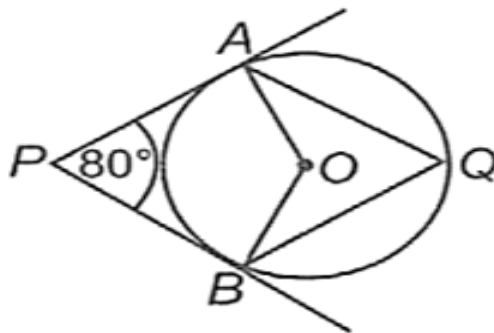
Section A

Questions 1 to 10 carry 1 mark each

- The length of the tangent from an external point A to a circle, of radius 3 cm, is 4 cm. The distance of A from the centre of the circle is:
a) 7 cm b) $\sqrt{7}$ cm c) 5 cm d) 25 cm
- From an external point Q, the length of the tangent to a circle is 5 cm and the distance of Q from the centre is 8 cm. The radius of the circle is:
a) 39 cm b) 3 cm c) 7 cm d) $\sqrt{39}$ cm
- In the given figure, the perimeter of $\triangle ABC$ is:

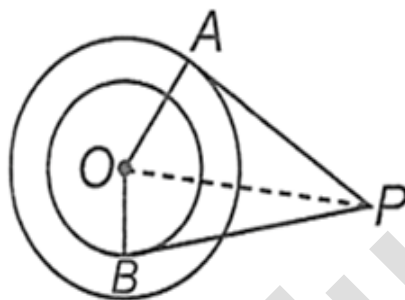


- 15 cm b) 45 cm c) 30 cm d) 60 cm
- Two circles of radii 10 cm and 8 cm intersect each other and the length of common chord is 12 cm. The distance between their centres is _____.
a) $4\sqrt{7}$ cm b) $3\sqrt{7}$ cm c) $\sqrt{7}$ cm d) $(8 + 2\sqrt{7})$ cm
 - In the given figure, O is the centre of the circle. If PA and PB are tangents, then the value of $\angle AQB$ is



- a) 60° b) 80° c) 100° d) 50°

6. In the given figure, O is the centre of two concentric circles of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circles. If PA = 12 cm, then PB =



- a) $5\sqrt{10}$ cm b) $5\sqrt{2}$ cm c) $3\sqrt{5}$ cm d) $4\sqrt{10}$ cm

7. If the tangents PA and PB from an external point P to a circle with centre O are inclined to each other at an angle of 80° , then $\angle POA$ equals:

- a) 60° b) 80° c) 70° d) 50°

8. QP is a tangent to a circle with centre O at the point P on the circle. If $\triangle OPQ$ is an isosceles, then $\angle OQP$ equals.

- a) 90° b) 30° c) 45° d) 60°

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

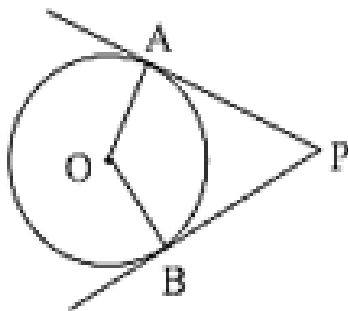
- a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false.
 d) A is false but R is true.

9. Assertion (A): A tangent to a circle is perpendicular to the radius through the point of contact.

Reason (R): The lengths of tangents drawn from an external point to a circle are equal.

10. Assertion (A): If PA and PB are tangents drawn to a circle with centre O from an external point P, then the quadrilateral OAPB is a cyclic quadrilateral.

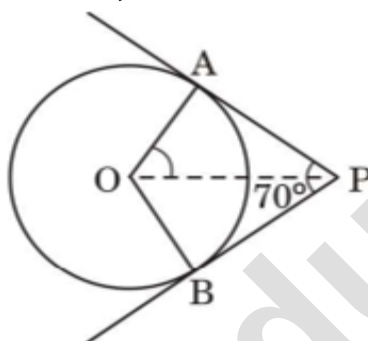
Reason (R): In cyclic quadrilateral opposite angles are equal.



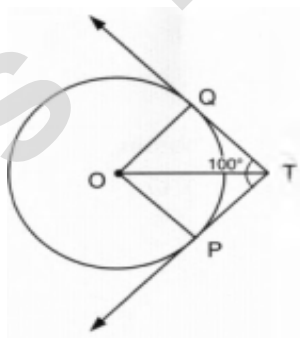
SECTION – B

Questions 11 to 15 carry 2 marks each

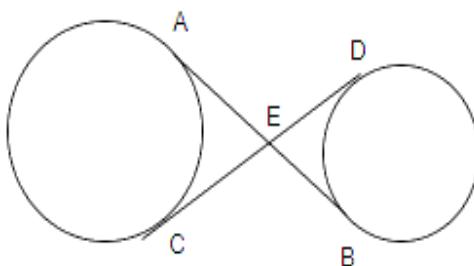
11. In Figure, if tangents PA and PB drawn from a point P to a circle with centre O, are inclined to each other at an angle of 70° , then find the measure of $\angle POA$.



12. Two tangents TP and TQ are drawn from an external point T to a circle with centre O as shown in Figure. If they are inclined to each other at an angle of 100° , then what is the value of $\angle POQ$?

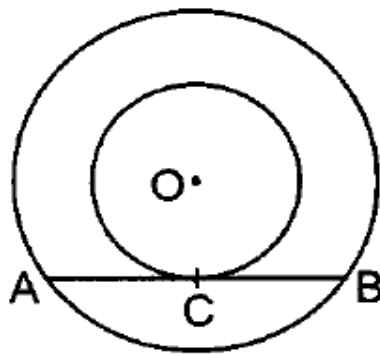


13. In the given figure, common tangents AB and CD to two circles intersect at E. Prove that $AB = CD$.

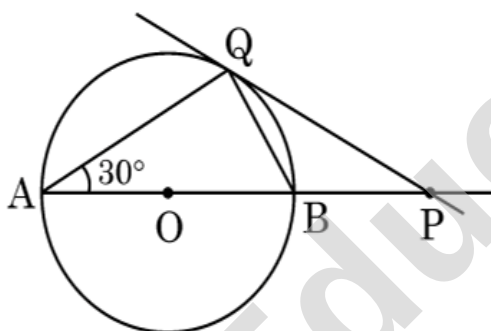


14. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact. Using the above, do the following: In figure, O is the centre of the two

concentric circles. AB is a chord of the larger circle touching the smaller circle at C. Prove that $AC = BC$.



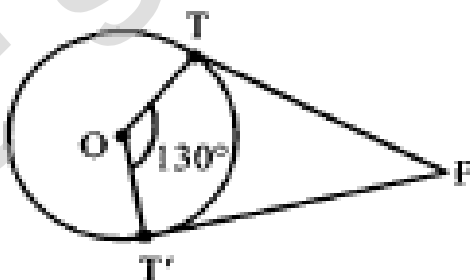
15. In the given figure, PQ is tangent to a circle centred at O and $\angle BAQ = 30^\circ$; show that $BP = BQ$.



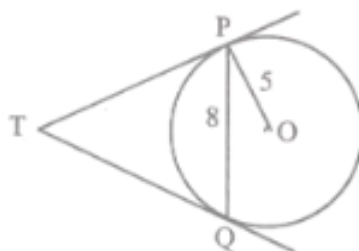
SECTION – C

Questions 16 to 19 carry 3 marks each

16. In the adjoining figure, PT and PT' are tangents from P to the circle with centre O. If $\angle TOT' = 130^\circ$, then find $\angle OPT$.

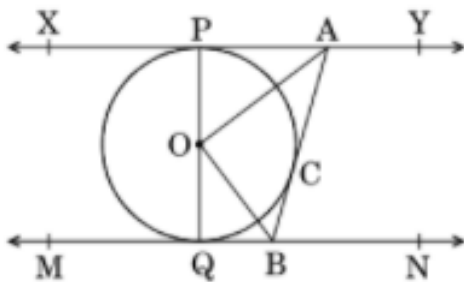


17. In the given figure, PQ is a chord of length 8 cm of a circle of radius 5 cm and centre O. The tangents at P and Q intersect at point T. Find the length of TP.



18. Prove that parallelogram circumscribing a circle is a rhombus.

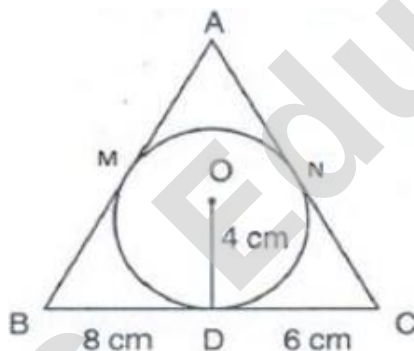
19. In the figure, XY and MN are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and MN at B. Prove that $\angle AOB = 90^\circ$.



SECTION – D

Questions 20 to 21 carry 5 marks each

20. In figure, a $\triangle ABC$ is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC are of lengths 8 cm and 6 cm respectively. Find the lengths of sides AB and AC, when area of $\triangle ABC$ is 84 cm^2 .



21. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.

SECTION – E (Case Study Based Questions)

Questions 22 & 23 carry 4 marks each

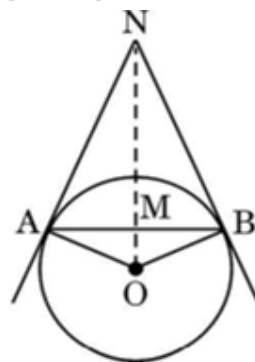
22. Read the following text carefully and answer the questions that follow:

Circles play an important part in our life. When a circular object is hung on the wall with a cord at nail N, the cords NA and NB work like tangents. Observe the figure, given that $\angle ANO = 30^\circ$ and $OA = 5 \text{ cm}$.

- Find the distance AN. (1)
- Find the measure of $\angle AOB$. (1)
- Find the total length of cords NA, NB and the chord AB. (2)

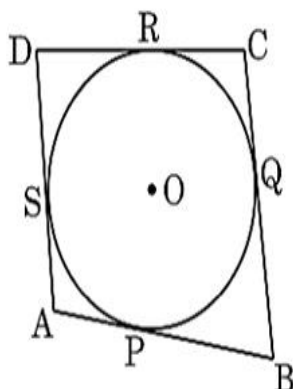
OR

If $\angle ANO$ is 45° , then name the type of quadrilateral OANB. Justify your answer. (2)



23. Read the following text carefully and answer the questions that follow:

In a park, four poles are standing at positions A, B, C and D around the circular fountain such that the cloth joining the poles AB, BC, CD and DA touches the circular fountain at P, Q, R and S respectively as shown in the figure.



- If O is the centre of the circular fountain, then $\angle OSA = \dots$ (1)
- If $AB = AD$, then write the name of the figure ABCD. (1)
- If $DR = 7$ cm and $AD = 11$ cm, then find the length of AP. (2)

OR

If O is the centre of the circular fountain with $\angle QCR = 60^\circ$, then find the measure of $\angle QOR$. (2)

Circle Paper Details – Analysis		
Objective Questions		
MCQ	1 marks x 8 question = 8	
Assertion Reason	1 marks x 2 question = 2	
Subjective		
Short type I	2 marks x 5 question = 10	
Short type II	3 marks x 4 question = 12	
Long Type	5 marks x 2 question = 10	
Case Studies Based		
Case 1	4 marks	
Case 2	4 marks	

Total = 50 marks Your Score =