Mathematics

Practice Test Paper 10

(Chapter 10: Circles)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Give exact answers unless stated otherwise. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. For radius r and centre-to-external-point distance d, the tangent length is:

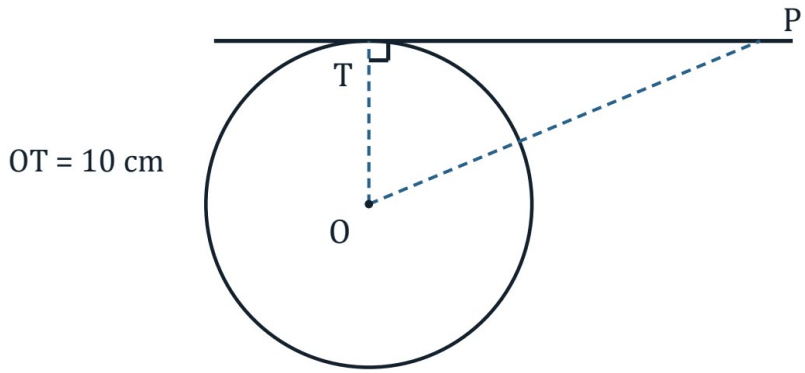
(A) d − r

(B) $\sqrt{d^2 - r^2}$

(C) $\sqrt{d^2 + r^2}$

(D) d + r

2. For the circle shown, O is the centre, OT = 10 cm and OP = 26 cm. The tangent length PT is:



(A) 16 cm

(B) 24 cm

(C) 36 cm

(D) $\sqrt{776}$ cm

3. The two tangents to a circle from P touch at A and B. Which segment is bisected by OP?

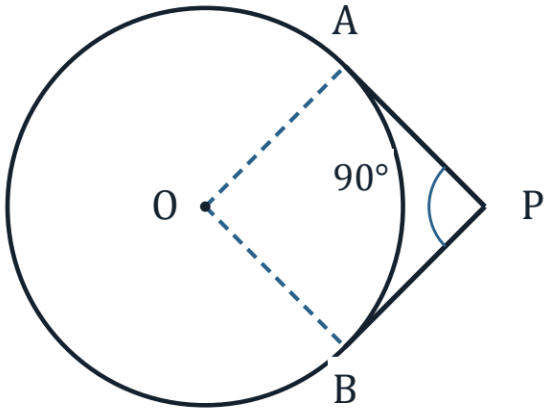
(A) PA

(B) PB

(C) AB

(D) OA

4. Two tangents PA and PB meet at a right angle. The minor angle ∠AOB at the centre is:



(A) 45°
(B) 180°
(C) 90°
(D) 135°

5. A line perpendicular to a radius at its endpoint on the circle is a:

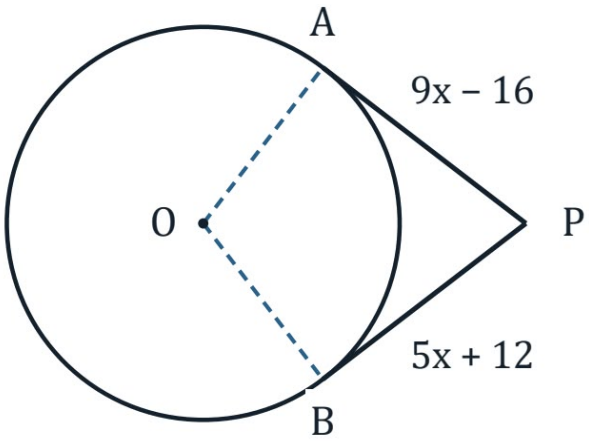
(A) tangent
(B) diameter
(C) secant through the centre
(D) chord

SECTION B

(4 questions × 2 marks = 8 marks)

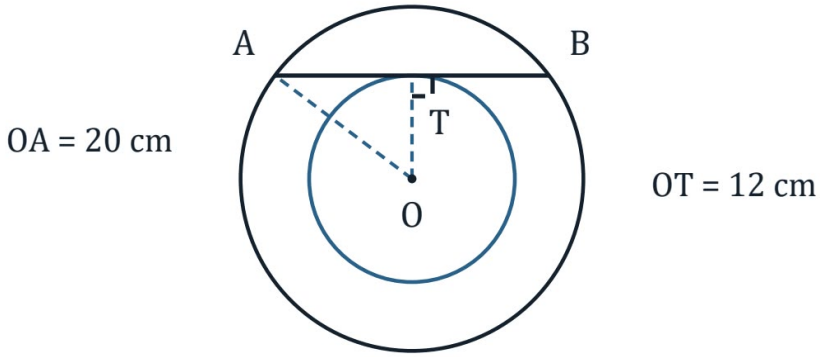
6. At a point P on a circle, two different lines are claimed to be tangents. Explain why this is impossible.

7. PA and PB are tangents to the circle with centre O. Their lengths are (9x − 16) cm and (5x + 12) cm. Find x and each tangent length.



8. A tangent from P has length 3r, where r is the circle's radius. Express OP in terms of r.

9. The two circles have the same centre O and radii 20 cm and 12 cm. The chord AB touches the smaller circle at T. Find AB.

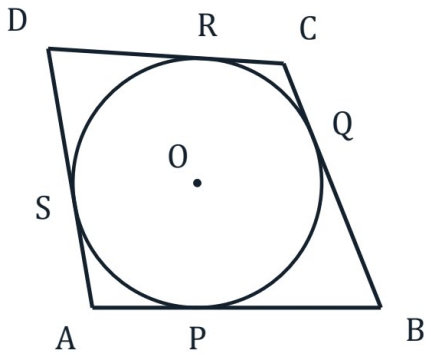


SECTION C

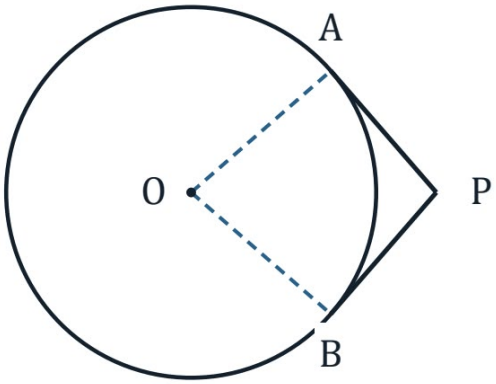
(3 questions × 3 marks = 9 marks)

10. A rectangle has sides 12 cm and 8 cm. Can a circle touch all four sides? Justify using tangent lengths. Then find the radius of the largest circle that can fit inside the rectangle.

11. ABCD circumscribes a circle, touching it at P, Q, R and S on consecutive sides. Prove that AB + CD = BC + DA.



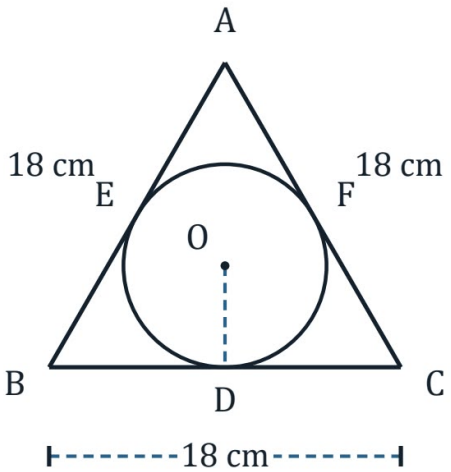
12. PA and PB are tangents to a circle with centre O. Prove that ∠APB and the minor angle ∠AOB are supplementary.



SECTION D

(Application Based Question - 3 marks)

13. An equilateral triangular plaque ABC of side 18 cm contains an incircle touching AB, BC and CA at E, D and F. O is the circle's centre.



(i) Find AE.

(ii) Find the altitude AD.

(iii) Find the incircle radius.