Choose the correct option-

1. The length of the tangent drawn from a point 8cm away from the centre of a circle of radius 6cm is

   (a) 10cm   (b) 5cm   (c) $\sqrt{7}cm$ (d) $2\sqrt{7}$ cm

2. If tangents PA and PB from a point P to a circle with centre O are inclined to each other at an angle of 80° ,then   ∠POA is

   (a)30^0 (b) 70^0 (c)50^0 (d)100^0

3. The pair of tangents AP and AQ drawn from an external point A to a circle with centre O are   perpendicular to each other and length of each tangent is 5 cm .Then the diameter of the circle is ------------.

4. If two tangents inclined at an angle 60°are drawn to a circle of radius 3 cm then length of each tangent is --------------.

5. If the angle between two tangents drawn from a point P to a circle of radius r and centre O is 120^0 then find the length of OP .

6. PA and PB are the two tangents drawn to the circle .O is the centre of the circle . A and B are the point of contact of the tangents PA and PB with the circle .If ∠OPA=35^0 then find ∠POB .

7. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact . **[NCERT TEXTBOOK]**

8. Two tangents TP and TQ are drawn to a circle with centre O from an external point T . Prove that $∠PTQ = 2∠OPQ$. **[CBSE 2009, 11 ,12 & 13]**

9. If a circle touches the side BC of a triangle ABC at P and extended sides AB and AC at Q and R respectively. Prove that $AQ = \frac{1}{2}(BC + CA + AB)$.

   [NCERT EXEMPLAR , CBSE 2011,12]
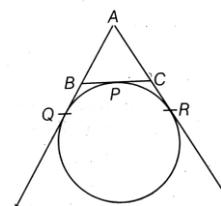
10. PQ is a chord of length 8cm of a circle of radius 5cm .The tangents at P and Q intersect at a point T . Find the length TP. **[NCERT TEXTBOOK]**
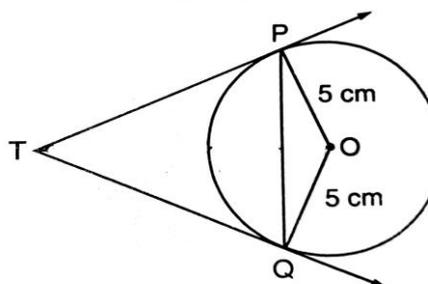
11. If a, b, c are the sides of a right triangle where c is the hypotenuse, prove that the radius r of the circle which touches the sides of the triangle is given by $r = \frac{a+b-c}{2}$.
    [NCERT EXEMPLAR , CBSE 2012]

12. In a right triangle ABC in which ∠ B= 90^0 , a circle is drawn with AB as diameter intersecting the hypotenuse AC at P . Prove that the tangent to the circle at P bisects BC.

13. Prove that the tangent drawn at the mid- point of an arc of a circle is parallel to the chord joining the end points of the arc.

14. AB is a diameter and AC is a chord of a circle with centre O such that ∠BAC=30^0. The tangent at C intersects extended AB at a point D . Prove that BC = BD.

15. A is a point at a distance 13 cm from the centre O of a circle of radius 5 cm. AP and AQ are the tangents to the circle at P and Q . If a tangent BC is drawn at a point R lying on the minor arc PQ to intersect AP at B and AQ at C , find the perimeter of the Δ ABC .

16. AB is a diameter of a circle . AH and BK are the perpendiculars from A and B respectively to the tangent at P. Prove that AH+BK=AB.

17. If a hexagon ABCDEF circumscribe a circle , prove that AB+CD+EF = BC+DE+FA.
    [NCERT EXEMPLAR]

18. In the given figure , from an external point P , a tangent PT and a line segment PAB drawn to a circle with centre O . ON is perpendicular on the chord AB . Prove that PA.PB = $PN^2 - AN^2$. *[NCERT EXEMPLAR]*
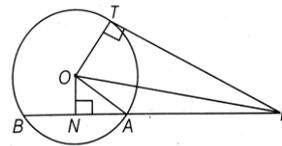
19. In the given fig. a ΔABC is drawn to circumscribe a circle of radius 4 cm such that the line segment BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC
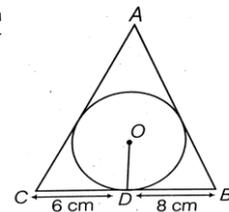
20. In the given fig. XY and X′Y′ are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X′Y′ at B. Prove that $< AOB = 90°$.