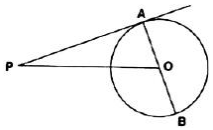
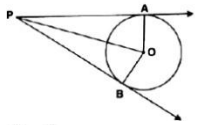
Ch-10 Circles

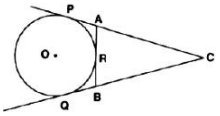
1. In the figure, PA is a tangent from an external point P to a circle with centre O. If ∠POB = 115°, then find ∠APO.



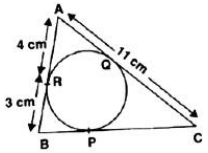
2. In the following figure, PA and PB are tangents drawn from a point P to the circle with centre O. If ∠APB = 60°, then what is ∠AOB?

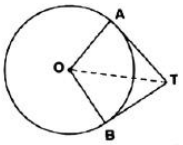


3. In the figure, CP and CQ are tangents to a circle with centre O. ARB is another tangent touching the circle at R. If QC = 11 cm, BC = 7 cm then find, the length of BR.

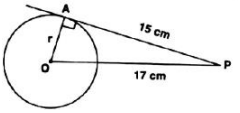


4. In the left figure below, ΔABC is circumscribing a circle. Find the length of BC.

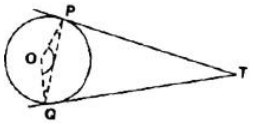




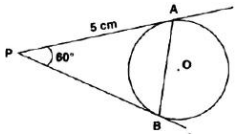
5. In the right figure above, if ∠ATO = 40°, find ∠AOB.
6. From a point P, the length of the tangent to a circle is 15 cm and distance of P from the centre of the circle is 17 cm, then what is the radius of the circle?



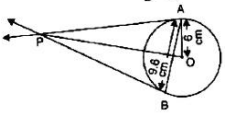
7. The two tangents from an external point P to a circle with centre O are PA and PB. If ∠APB = 70°, then what is the value of ∠AOB?
8. 2 tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that ∠PTQ = 2 ∠OPQ.



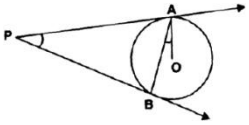
9. A circle is touching the side BC of a ΔABC at P and touching AB and AC produced at Q and R. Prove that AQ = $\frac{1}{2}$ (Perimeter of ΔABC).
10. In two concentric circles, a chord of the larger circle touches the smaller circle. If the length of this chord is 8 cm and the diameter of the smaller circle is 6 cm, then find the diameter of the larger circle.
11. In the following figure, PA and PB are two tangents drawn to a circle with centre O, from an external point P such that PA = 5 cm and ∠APB = 60°. Find the length of chord AB.



12. In the following figure, AB is a chord of length 9.6 cm of a circle with centre O and radius 6 cm. The tangents at A and B intersect at P. Find the length of PA.

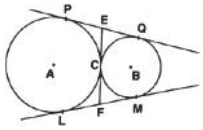


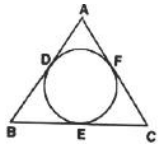
13. 2 tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that ∠APB = 2∠OAB.



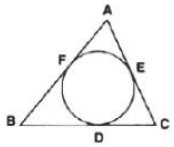
14. ABC is an isosceles triangle, in which AB = AC, circumscribed about a circle. Show that BC is bisected at the point of contact.

15. Prove that the angle between the two tangents to a circle drawn from an external point is supplementary to the angle subtended by the line segment joining the points of contact at the centre.
16. Two tangents PA and PB are drawn from an external point P to a circle with centre O. Prove that AOBP is a cyclic quadrilateral.
17. In the left figure below, two circle touch each other externally at C. Prove that the common tangent at C bisects the other two common tangents.

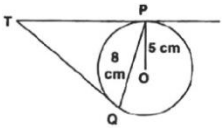




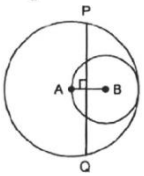
18. In the right figure above, if Ab = AC, prove that BE = CE.
19. A point P is 13 cm from the centre of the circle. The length of the tangent drawn from P to the circle is 12 cm. Find the radius of the circle.
20. The incircle of ΔABC touches the sides BC, CA and AB at D, E and F respectively. Show that AF + BD + CD = AE + BF + CE = $\frac{1}{2}$ (Perimeter of ΔABC).



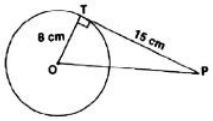
21. Show that the tangents drawn at the end points of a diameter of a circle are parallel.
22. PQ is a chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length of TP.

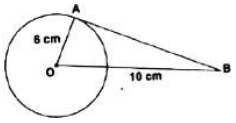


23. In the figure, 2 circles with centres A and B and radii 5 cm and 3 cm are touching each other internally. If the perpendicular bisector of segment AB, meets the bigger circle at P and Q, find the length of PQ.

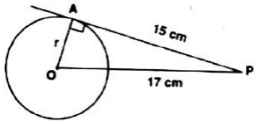


24. 2 tangents making an angle of 120° with each other, are drawn to a circle of radius 6 cm. Show that the length of each tangent is $2\sqrt{3}$ cm.
25. In the left figure below, PT is a tangent to the circle and O is its centre. Find OP.





26. If O is the centre of the circle, then find the length of the tangent AB in the right figure above.
27. From a point P, the length of the tangent to a circle is 15 cm and distance of P from the centre of the circle is 17 cm, then what is the radius of the circle?



28. Prove that the tangents drawn at the ends of a chord of a circle make equal angles with the chord.
29. Given two concentric circle of radii 10 cm and 6 cm. Find the length of the chord of the larger circle which touches the other circle.
30. In a right ΔABC, right angled at B, BC = 5 cm and AB = 12 cm. The circle is touching the sides of ΔABC. Find the radius of the circle.
31. Prove that the parallelogram circumscribing a circle is a rhombus.
32. In the following figure, OP is equal to diameter of the circle. Prove that ABP is an equilateral triangle.