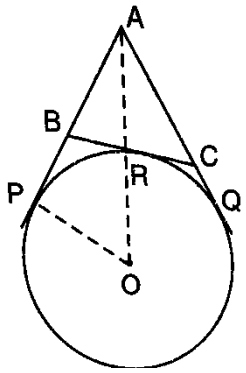
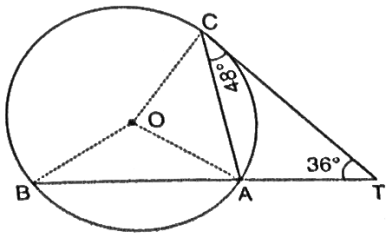
1. In triangle PQR, PQ = 24 cm, QR = 7 cm and $\angle PQR = 90°$. Find the radius of the inscribed circle.
2. In the given figure, AP and AQ are tangents to the circle with centre O. BC is tangent at point R on it.

   If OA = 17 cm and radius of the circle = 8 cm, find the perimeter of the triangle ABC.

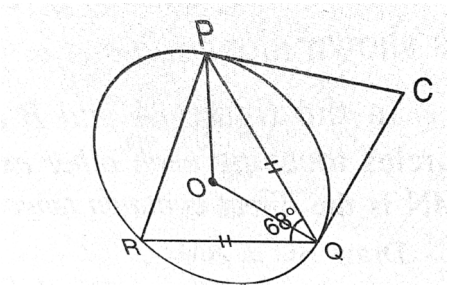


3. A, B and C are three points on a circle. The tangent at c meets BA produced at T. Given that ∠ATC = 36° and that ∠ACT = 48°, calculate the angle subtended by AB at the centre of the circle.



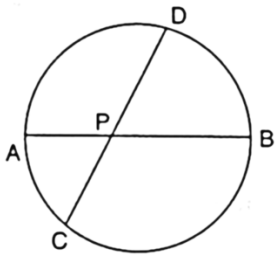
4. P and Q are centres of circles with radii 9 cm and 2 cm respectively. PQ =17 cm. R is the centre of a circle of radius x cm, which touches the above circles externally. Given that ∠PRQ =90°, write an equation in x and solve it.
5. Two circles with radii 25 cm and 9 cm touch each other externally. Find the length of the direct common tangent.
6. The centres of two circles with radii 6 cm and 2 cm are 10 cm apart. Calculate the length of the transverse common tangent.

7. In the figure, given alongside, PQ = QR, ∠RQP = 68°, PC and QC are tangents to the circle with centre O. Calculate the values of (i) ∠QOP (ii) ∠QCP.

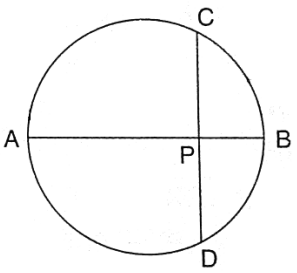


8. From each of the following figures, find the value of x.

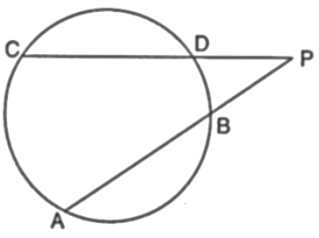
i. PA = 4 cm, PB =6 cm, PC = 5 cm and PD = x cm.



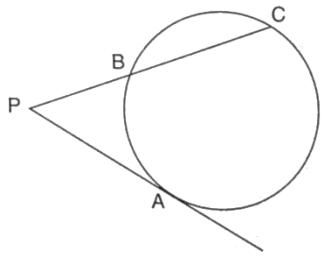
ii. PA = 2PB = 12cm, PC = PD = x cm



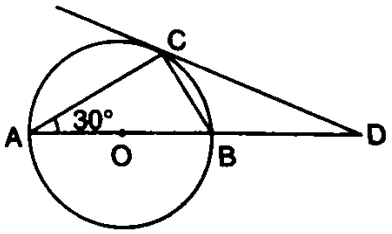
iii. AB = 10 cm, PB = 6 cm, CD = x cm and PD = 4 cm



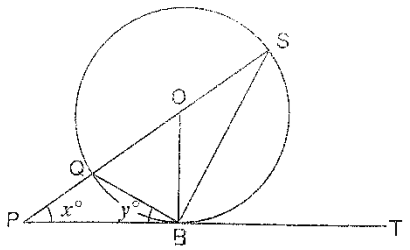
iv. PA = 20 cm, PB = 16 cm and BC = x cm.



9. In the given figure, AB is the diameter and AC is the chord of a circle such that ∠BAC = 30°. The tangent at C intersects AB produced at D. Prove that : BC = BD.

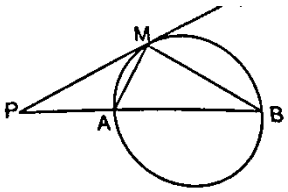


10. In the given figure, PT touches a circle with centre O at R. Diameter SQ when produced meets PT at P. If ∠SPR = x° and ∠QRP = y°, show that $x° + 2y° = 90°$.



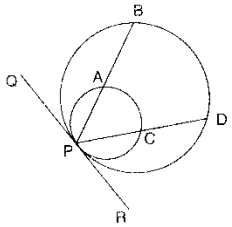
11. In the given figure, PM is a tangent to the circle and PA = AM. Prove that :

i. $\Delta\, PMB\ is\ isosceles$
ii. $PA \times PB = MB^2$



12. Two circles touch each other internally at point P. QPR is the tangent at P; segments PAB and PCD meet circles at points A, B, C and D as shown in the figure.

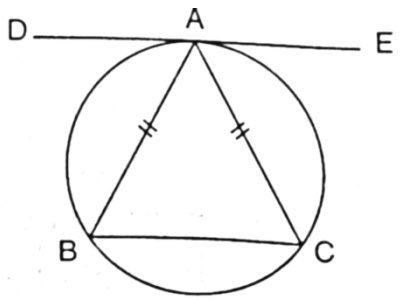
Show that chord AC is parallel to chord BD.



13. In a right triangle ABC, a circle with AB as diameter is drawn to intersect the hypotenuse AC in P. Prove that the tangent at P, bisects the side BC.

14. ABC is an isosceles triangle with AB = AC. A circle through B touches side AC at its middle point D and intersects side AB in point P. Show that : AB = 4 × AP.

15. The given figure shows an isosceles triangle ABC inscribed in a circle such that AB = AC. If DAE is a tangent to the circle at point A, prove that DE is parallel to BC.



16. AB is the diameter of a circle with centre O. A line PQ touches the given circle at point R and cuts the tangents to the circle through A and B at points P and Q respectively. Prove that : ∠POQ = 90°.