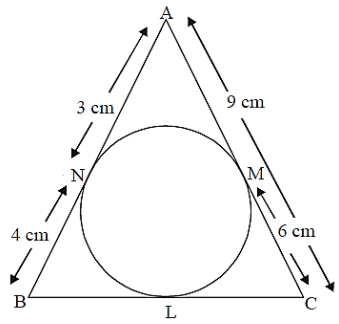
Topper's Secret Questions

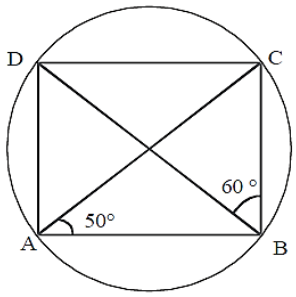
Circles

1. In fig., ΔABC is circumscribing a circle. Find the length of BC.

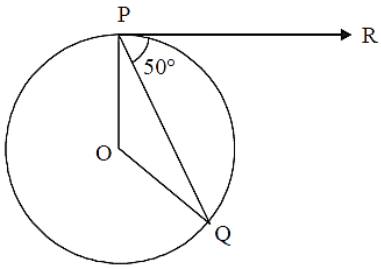


2. The length of the tangent to a circle from a point P, which is 25 cm away from the centre, is 24 cm. What is the radius of the circle?

3. In fig., ABCD is a cyclic quadrilateral. If $\angle BAC = 50°$ and $\angle DBC = 60°$, then find$\angle BCD$.



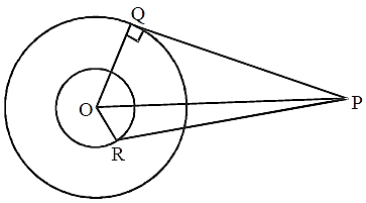
4. In figure, O is the centre of a circle, PQ is a chord and the tangent PR at P makes an angles of 50° with PQ. Find $\angle POQ$.



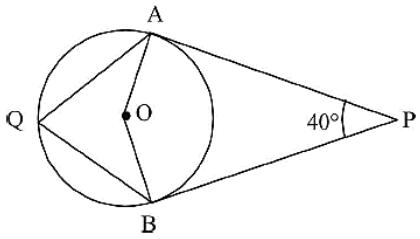
5. If two tangents inclined at an angle 60° are drawn to a circle of radius 3 cm, then find the length of each tangent.

6. If radii of two concentric circles are 4 cm and 5 cm, then find the length of the chord of that circle which is tangent to the other circle.

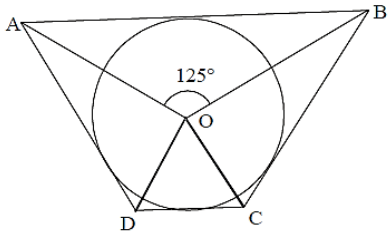
7. In the given figure, PQ is tangent to outer circle and PR is tangent to inner circle. If PQ = 4cm, OQ = 3 cm and OR = 2 cm then find the length of PR.



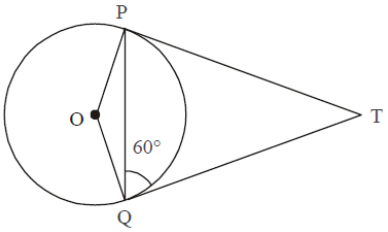
8. In the given figure, O is the centre of the circle, PA and PB are tangents to the circle then find $\angle AQB$.



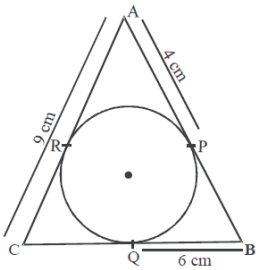
9. In the given figure, If $\angle AOB = 125°$ then find $\angle COD$.



10. If two tangent TP and TQ are drawn from an external point T such that $\angle TQP = 60°$ then find$\angle OPQ$.



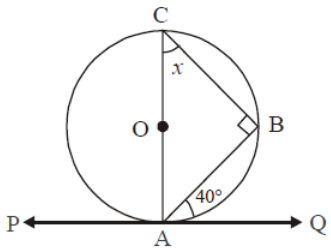
11. In the given fig. AP = 4 cm, BQ = 6 cm and AC = 9 cm. Find the semi perimeter of ΔABC.



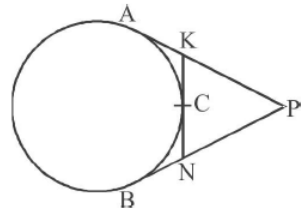
12. A circle is drawn inside a right angled triangle whose sides are a, b, c where c is the hypotenuse, which touches all the sides of the triangle. Prove $r = \frac{a+b-c}{2}$ where r is the radius of the circle.

13. Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

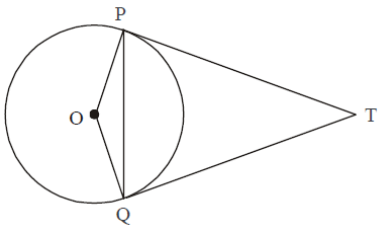
14. In the given Fig., AC is diameter of the circle with centre O and A is the point of contact, then find x.



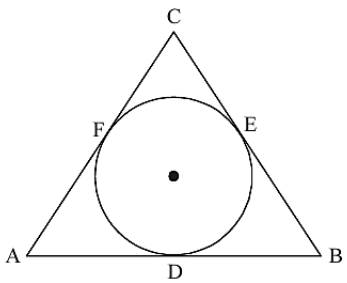
15. In the given fig. KN, PA and PB are tangents to the circle. Prove that: KN = AK + BN.



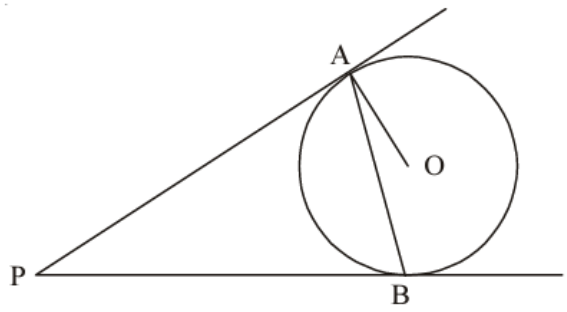
16. In the given fig. PQ is a chord of length 6 cm and the radius of the circle is 6 cm. TP and TQ are two tangents drawn from an external point T. Find $\angle PTQ$.



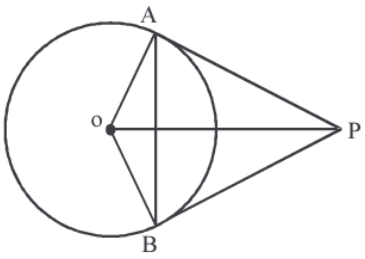
17. In the given figure find AD, BE, CF where AB = 12 cm, BC = 8 cm and AC = 10 cm.



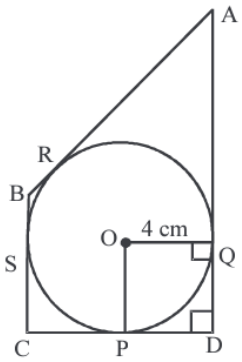
18. Two tangents PA and PB are drawn to a circle with centre O from an external point P. Prove that $\angle APB = 2\angle OAB$.



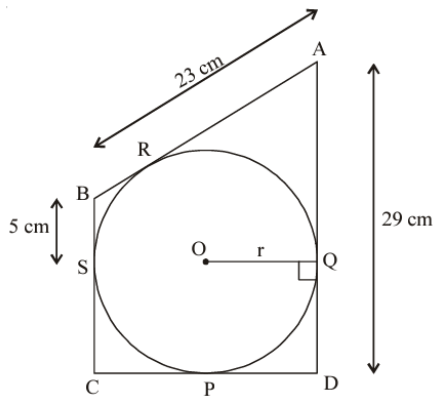
19. In the given fig. OP is equal to the diameter of the circle with centre O. Prove that $\angle ABP$ is an equilateral triangle.



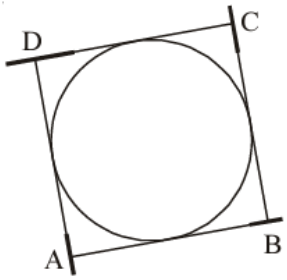
20. In the given fig., find PC. If AB = 13 cm, BC = 7 cm and $AD = 15\ cm$.



21. In the given figure, find the radius of the circle.

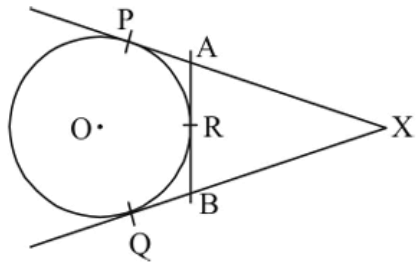


22. In the given figure, a circle touches all the four sides of a quadrilateral ABCD. If AB = 6 cm, BC = 9 cm and CD = 8 cm, then find the length of AD.

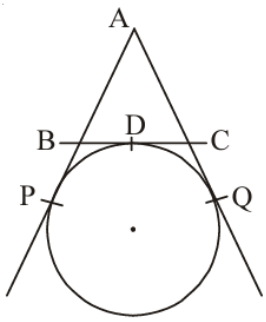


23. Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segment joining the points of contact at the centre.

24. In figure, XP and XQ are tangents from X to the circle with centre O, R is a point on the circle and AB is tangent at R. Prove that: $XA + AR = XB + BR$



25. In the given figure, find the perimeter of ΔABC, if $AP = 12\ cm$.

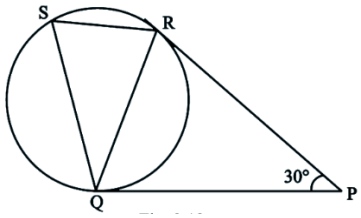


26. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

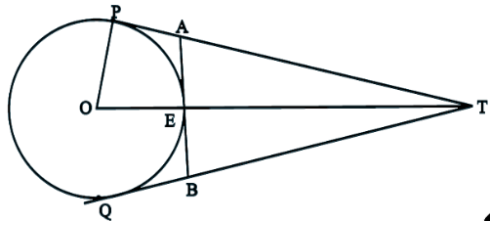
27. In a right triangle ABC in which ∠B = 90°, a circle is drawn with AB as diameter intersecting the hypotenuse AC and P. Prove that the tangent to the circle at P bisects BC.

28. In given Fig. tangents PQ and PR are drawn to a circle such that ∠RPQ = 30°. A chord RS is drawn parallel to the tangent PQ. Find the ∠RQS.

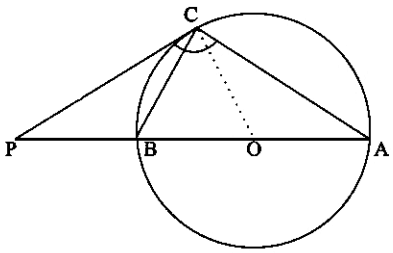
[Hint: Draw a line through Q and perpendicular to QP.]



29. In given Fig. O is the centre of a circle of radius 5 cm, T is a point such that OT = 13 cm and OT intersects the circle at E. If AB is the tangent to the circle at E, find the length of AB.



30. The tangent at a point C of a circle and a diameter AB when extended intersect at P. If $\angle PCA = 110°$, find $\angle CBA$ [see given Fig.].



ANSWER'S

Q1. 10 cm
Q2. 7 cm
Q3. 70°
Q4. 100°
Q5. $3\sqrt{3}$ cm
Q6. 6 cm
Q7. $\sqrt{21}\,cm$
Q8. 70°
Q9. $55°$
Q10. 30°
Q11. 15 cm
Q14. $40°$
Q16. $120°$
Q17. $7cm, 5cm, 3cm$
Q20. 5 cm
Q21. $11\ cm$
Q22. 5 cm
Q25. $24\ cm$
Q28. 30°
Q29. $\frac{20}{3}cm$
Q30. 70°