QUESTIONS
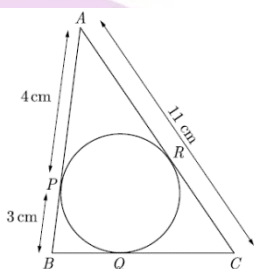
1. In figure, PA and PB are tangents to the circle with centre O such that $\angle APB = 50°$. Write the measure of $\angle OAB$.

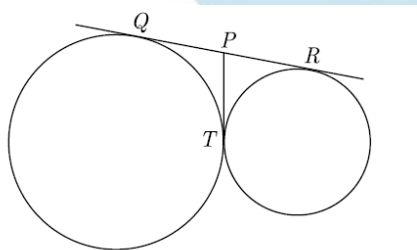
2. In the given figure, AOB is a diameter of the circle with centre O and AC is a tangent to the circle at A If $\angle BOC = 130°$, the find $\angle ACO$.
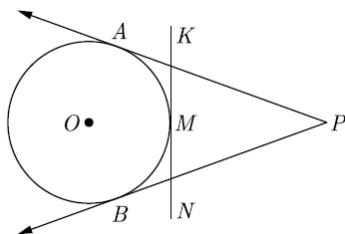

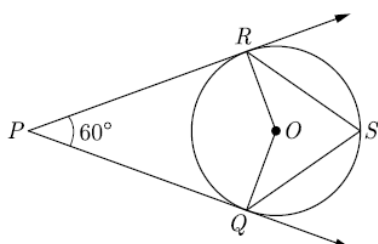3. In figure, $\triangle ABC$ is circumscribing a circle, the length of BC is...................... cm.

4. In the figure, QR is a common tangent to given circle which meet at T. Tangent at T meets QR at P. If QP = 3.8 cm, then find length of QR.

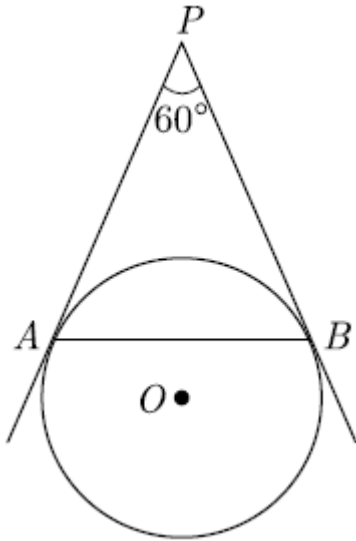5. PA and PB are tangents from point P to the circle with centre O as shown in figure. At point M, a tangent is drawn cutting PA at K and PB at N. Prove that $KN = AK + BN$
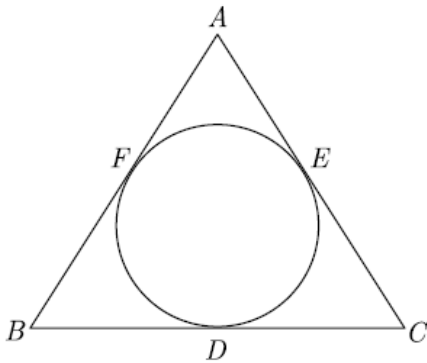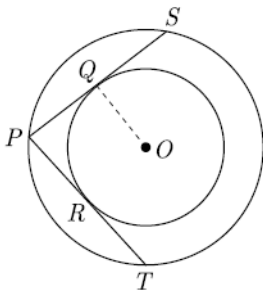

6. In the given figure, find $\angle QSR$.

7. In figure, AP and BP are tangents to a circle with centre O, such that $AP = 5$ cm and $\angle APB = 60°$. Find the length of chord AB
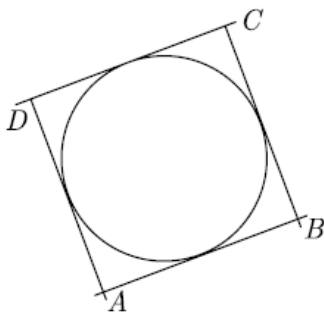

8. A triangle ABC is drawn to circumscribe a circle. If $AB = 13$ cm, $BC = 14$ cm and $AE = 7$ cm, then find AC.
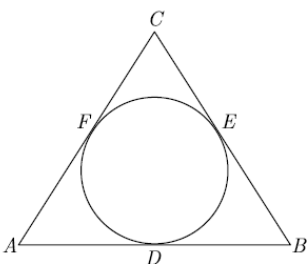

9. In the figure there are two concentric circles with centre O. PRT and PQS are tangents to the inner circle from a point P lying on the outer circle. If $PR = 5$ cm find the length of PS.
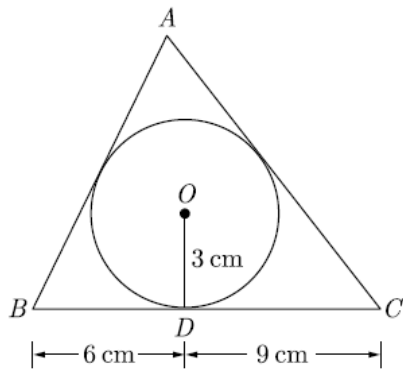

10. In figure, a circle touches all the four sides of a quadrilateral $ABCD$. If $AB = 6$ cm, $BC = 9$ cm and $CD = 8$ cm, then find the length of AD.
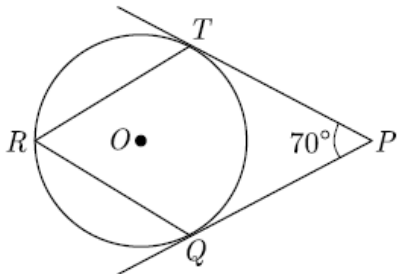

11. Prove that the lengths of two tangents drawn from an external point to a circle are equal.
12. In the given figure, a circle is inscribed in a $\triangle ABC$, such that it touches the sides AB, BC and CA at points D, E and F respectively. If the lengths of sides AB, BC and CA are 12 cm, 8 cm and 10 cm respectively, find the lengths of AD, BE and CF.
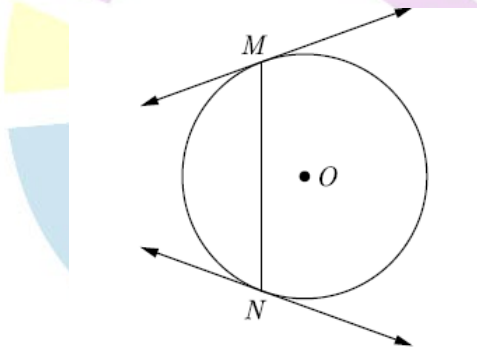
13. In figure, a triangle ABC is drawn to circumscribe a circle of radius 3 cm, such that the segments BD and DC are respectively of lengths 6 cm and 9 cm. If the area of $\triangle ABC$ is 54 cm², then find the lengths of sides AB and AC.
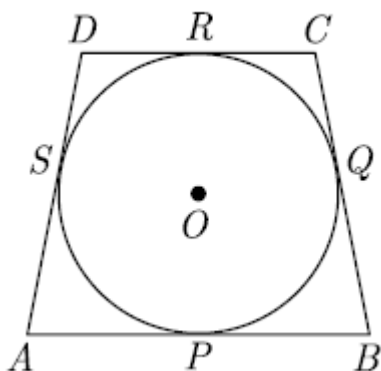

14. In figure, O is the centre of a circle. PT are tangents to the circle from an external point P. If $\angle TPQ = 70°$, find $\angle TRQ$.
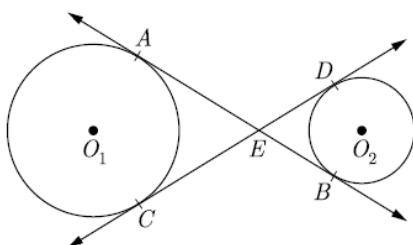

15. Prove that tangents drawn at the ends of a chord of a circle make equal angles with the chord.
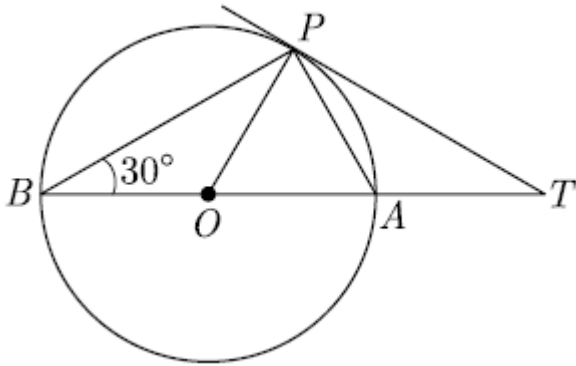

16. In Figure a quadrilateral $ABCD$ is drawn to circumscribe a circle, with centre O, in such a way that the sides AB, BC, CD, and DA touch the circle at the points P, Q, R and S respectively. Prove that. $AB + CD = BC + DA$
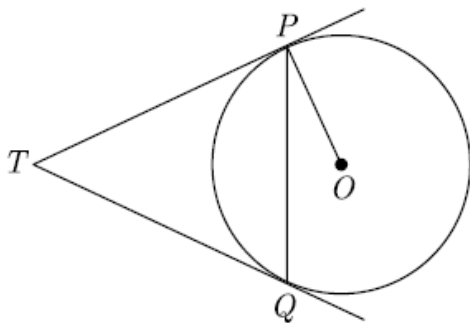

17. In Figure, common tangents AB and CD to the two circle with centres O_1 and O_2 intersect at E. Prove that $AB = CD$.
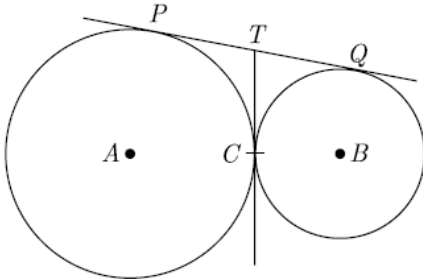
18. In the given figure, BOA is a diameter of a circle and the tangent at a point P meets BA when produced at T. If $\angle PBO = 30°$, what is the measure of $\angle PTA$?
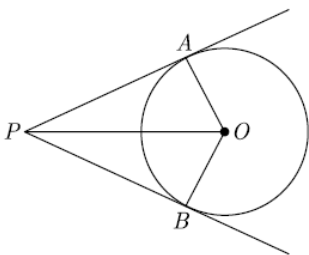

19. Prove that the rectangle circumscribing a circle is a square.

20. In figure, two tangents TP and TQ are drawn to circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.
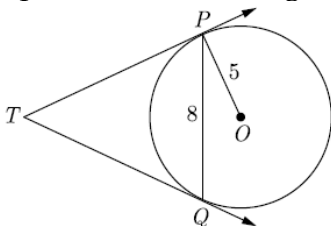

21. In given figure, two circles touch each other at the point C . Prove that the common tangent to the circles at C , bisects the common tangent at P and Q.

22. In the given figure, OP is equal to the diameter of a circle with centre O and PA and PB are tangents. Prove that ABP is an equilateral triangle.
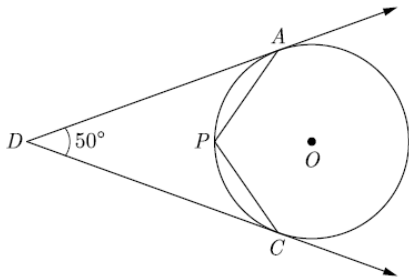

23. If a circle touches the side BC of a triangle ABC at P and extended sides AB and AC at Q and R, respectively, prove that $AQ = \frac{1}{2}(BC + CA + AB)$

24. In $\triangle ABD, AB = AC$. If the interior circle of $\triangle ABC$ touches the sides AB, BC and CA at D, E and F respectively. Prove that E bisects BC.

25. In Figure, PQ is a chord of length 8 cm of a circle of radius 5 cm and centre O. The tangents at P and Q intersect at point T. Find the length of TP.
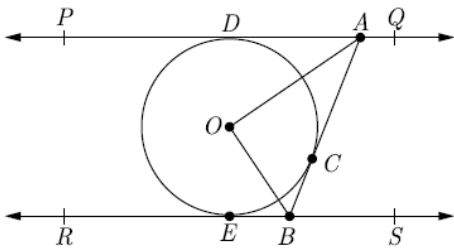

26. a, b and c are the sides of a right triangle, where c is the hypotenuse. A circle, of radius r, touches the sides of the triangle. Prove that $r = \frac{a+b-c}{2}$.
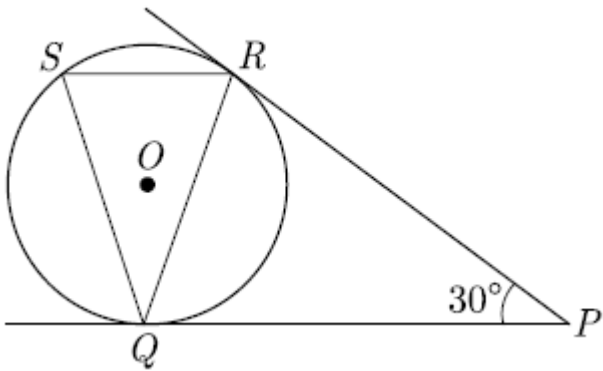
27. In the given figure, O is the centre of the circle. Determine $\angle APC$, if DA and DC are tangents and $\angle ADC = 50°$.

28. From a point T outside a circle of centre O, tangents TP and TQ are drawn to the circle. Prove that OT is the right bisector of line segment PQ.

29. In Figure, PQ and RS are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting PQ at A and RS at B. Prove that $\angle AOB = 90°$.

30. In the figure, tangents PQ and PR are drawn from an external point P to a circle with centre O, such that $\angle RPQ = 30°. A$ chord RS is drawn parallel to the tangent PQ. Find $\angle RQS$.

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ANSWERS

1. 25°   2. 40°   3. 10 cm   4. 7.6 cm   6. 60°   7. 5 cm   8. 15 cm   9. 10 cm
10. 5 cm   12. AD = 7 cm, BE = 5 cm, CF = 3 cm   13. AB = 9 cm, AC = 12 cm and BC = 15 cm.   14. 55°   18. 30°
25. $\frac{20}{3} cm$ 27. 115°   30. 30°