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Q1. Out of the two concentric circles, the radius of the outer circle is 5 cm and the chord AC of length 8 cm is a tangent to the inner circle. Find the radius of the inner circle.

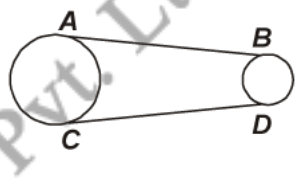
Q2. In tangent at a point C of a circle and a diameter AB when extended intersect at P. If $\angle PCA = 110°$, find $\angle CBA$.

Q3. If an isosceles ΔABC in which $AB = AC = 6$ cm, is inscribed in a circle of radius 9 cm, find the area of the triangle.

Q4. A chord PQ of a circle is parallel to the tangent drawn at a point R of the circle. Prove that R bisects the arc PRQ.

Q5. Prove that the centre of a circle touching two intersecting lines lies on the angle bisector of the lines.

Q6. In figure, AB and CD are common tangents to two circles of unequal radii. Prove that $AB = CD$.



Q7. If from an external point B of a circle with centre O, two tangents BC and BD are drawn such that $\angle DBC = 120°$, prove that $BC + BD = BO$, *i.e.*, $BO = 2BC$.

Q8. Prove that the tangents drawn at the ends of a chord of a circle make equal angles with the chord.

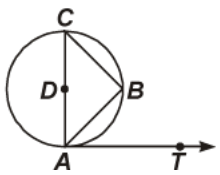
Q9. Two tangents PQ and PR are drawn from an external point to a circle with centre O. Prove that $QORP$ is a cyclic quadrilateral.

Q10. Prove that a diameter AB of a circle bisects all those chords which are parallel to the tangent at the point A.

Q11. Let s denotes the semi-perimeter of a ΔABC in which $BC = a$, $CA = v$ and $AB = c$. If a circle touches the sides BC, CA, AB at D, E, F, respectively. Prove that $BD = s - b$.

Q12. From an external point P, two tangents, PA and PB are drawn to a circle with centre O. At one point E one the circle tangent is drawn which intersects PA and PB at C and D, respectively. If $PA = 10$ cm, find the perimeter of the triangle PCD.

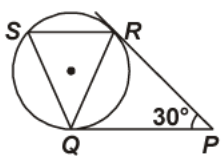
Q13. If AB is a chord of a circle with centre O, AOC is a diameter and AT is the tangent at A as shown in figure. Prove that $\angle BAT = \angle ACB$.



Q14. Two circles with centres O and O' of radii 3 cm and 4 cm, respectively intersect at two points P and Q, such that OP and $O'P$ are tangents to the two circles. Find the length of the common chord PQ.

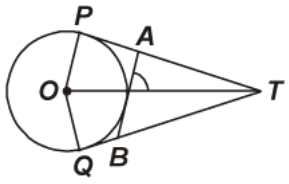
Q15. In a right angle ΔABC is which $\angle B = 90°$, a circle is drawn with AB as diameter intersecting the hypotenuse AC at P. Prove that the tangent to the circle at PQ bisects BC.

Q16. In figure, tangents PQ and PR are drawn to a circle such that $\angle RPQ = 30°$. A chord RS is drawn parallel to the tangent PQ. Find the $\angle RQS$.



Q17. A is a point at a distance 13 cm from the centre O of a 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 ABC.

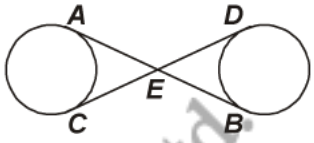
Q18. In figure, O is the centre of a circle of radius 5 cm, T is a point such that $OT = 13$ and OT intersects the circle at E, if AB is the tangent to the circle at E, find the length of AB.



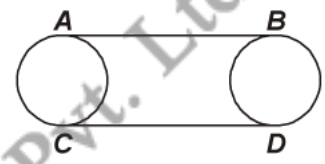
Q19. Prove that the tangent drawn at the mid-point of an arc of a circle is parallel to the chord joining the end points of the arc.

Q20. AB is a diameter and AC is a chord of a circle with centre O such that $\angle BAC = 30°$. The tangent at C intersects extended AB at a point D. Prove that $BC = BD$.

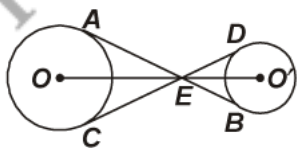
Q21. In figure, common tangents AB and CD to two circles intersect at E. Prove that $AB = CD$.



Q22. In figure, AB and CD are common tangents to two circles of equal radii. Prove that $AB = CD$.



Q23. In a figure the common tangents, AB and CD to two circles with centres O and O' intersect at E. Prove that the points O, E and O' are collinera.



Q24. If a hexagon $ABCDEF$ circumscribe a circle, prove that

$$AB + CD + EF = BC + DE + FA.$$

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S1. Draw yourself.

S2. Draw yourself.

S3. Draw yourself.

S4. Draw yourself.

S5. $PQ = 3.25$ cm.

S6. Draw yourself.

S7. Draw yourself.

S8. Draw yourself.

S9. Draw yourself.

S10. Draw yourself.

S11. Draw yourself.