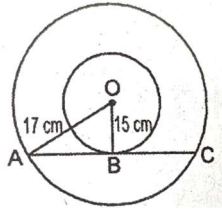
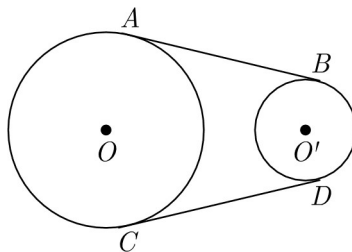


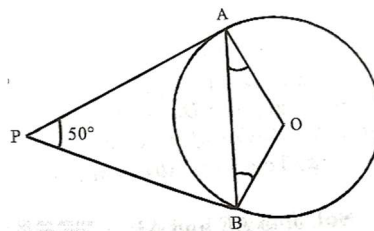
1. Q1. If radii of two concentric circles are 15cm and 17cm, then find the length of the chord of one circle which is tangent of the other.



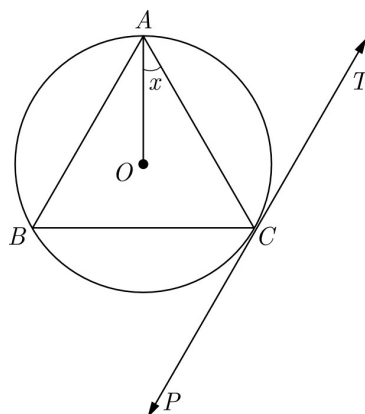
2. If angle between two tangents drawn from a point P to a circle of radius a and centre O is 60° , then find the length of AP.
3. In the figures AB and CD are common tangents to circles of unequal radii. Prove that $AB = CD$



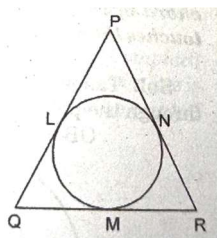
4. In the given figure PA and PB are two tangents to the circle with centre (o) such that the angle APB is 50° . Find the measure of angle OAB.



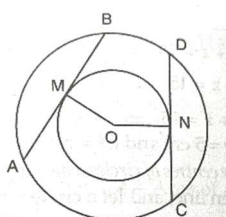
5. In the adjoining figure, PT is a tangent at point C of the circle with centre O. If $\angle ACP = 118^\circ$, then find the measure of $\angle x$.



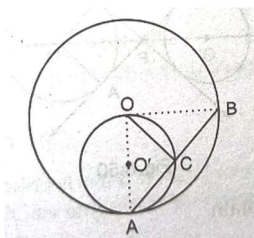
6. In the figure if $PQ = PR$, show that $QM = MR$.



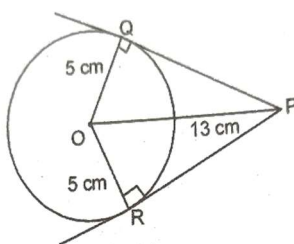
7. In two concentric circles, prove that all chords of the outer circle which touch the inner circle are of equal length.



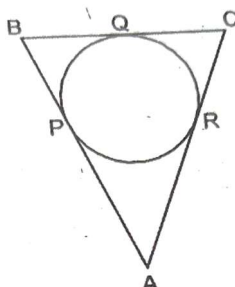
8. In the given figure, $C(O, r)$ and $C(O', r/2)$ touch internally at point A and AB is a chord of the circle $C(O, r)$ intersecting $C(O', r/2)$ at C. Prove that $AC = CB$.



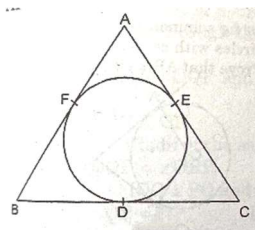
9. From a point P, which is at a distance of 13 cm from the centre of a circle of radius 5 cm, the pair of tangents PQ and PR drawn to the circle. Find the area of the quadrilateral PQOR. (in cm^2 .)



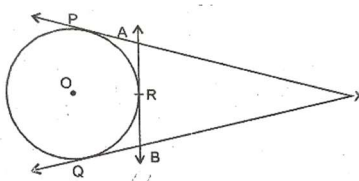
10. In the given figure, if $AP = 5\text{ cm}$, $BQ = 2\text{ cm}$, $CR = 3\text{ cm}$ then find the perimeter of triangle ABC.



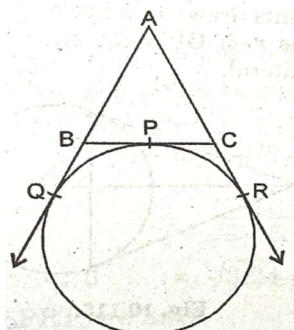
11. In the given figure, the incircle of triangle ABC touches the sides, BC, CA and AB at D, E, F respectively. Show that $AF + BD + CE = \text{half perimeter of triangle ABC}$.



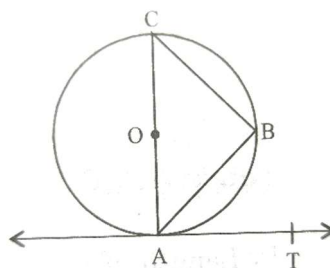
12. In the given figure XP, XQ are tangents from X to the circle with centre O. R is a point on the circle. Prove that $XA + XR = XB + BR$



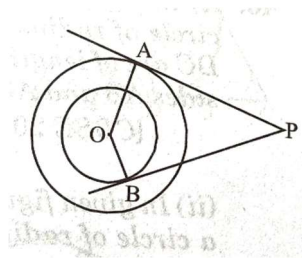
13. In the given figure a circle touches the side BC of triangle ABC at P and touches AB, AC produced at Q and R respectively. If $AQ = 5$ cm, find the perimeter of triangle ABC.



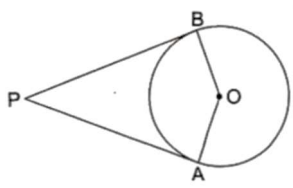
14. If AB is a chord of a circle with centre O, AOC is a diameter and AT is the tangent at A as shown in the figure, prove that $\angle BAT = \angle ACB$



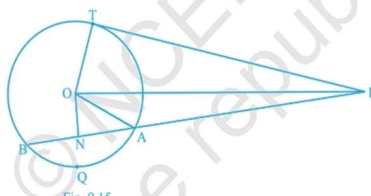
15. Tangents PA, PB are drawn from an external point P to two concentric circles with centre O and radius 8 cm and 5 cm respectively. If $AP = 15$ cm, find the length of BP.



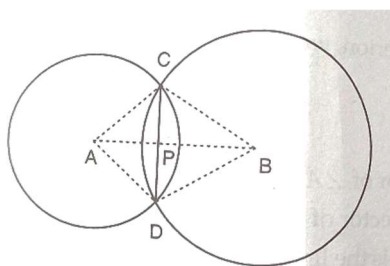
16. If d_1, d_2 ($d_1 > d_2$) be the diameters of two concentric circles, C be the length of the chord of the bigger circle which is also a tangent of the smaller circle prove that $d_2^2 = c^2 + d_1^2$.
17. In the given figure PA, PB are two tangents to a circle with centre O. Show that the points A, O, B, P are concyclic.



18. In the given figure from an external point P, a tangent PT, and a line segment PAB is drawn to a circle with centre as O. ON is perpendicular to the chord AB. Prove that
 $PA \cdot PB = PN^2 - AN^2$
 $PN^2 - AN^2 = OP^2 - OT^2$



19. Two circles with centres A and B with radii 3 cm and 4 cm respectively intersect at points C and D such that AC and BC are tangents to the two circles. Find the length of the common chord CD.

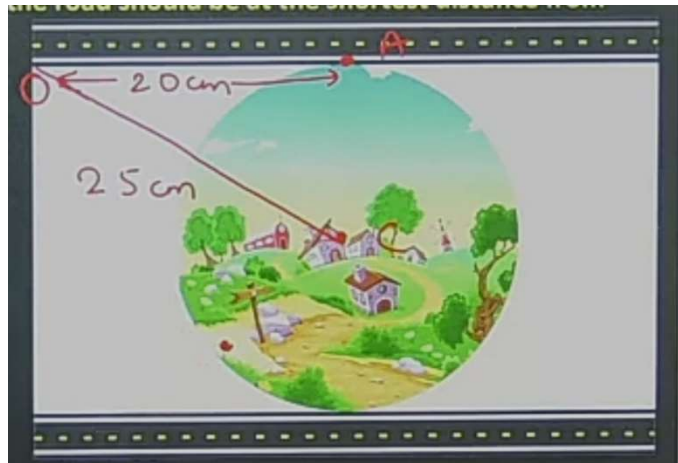


20. CASE STUDY BASED QUESTION.

PALAMPUR VILLAGE

People of the village want to construct road nearest to a circular village Rampur. The road cannot pass through the village. But the people want the road to be at shortest distance from the centre of the village. Suppose the road starts from point O, which is outside the village and touch the boundary of the circular village at A, such that OA is 20 cm. Also, the straight distance of the point O from the centre of the village is 25 cm.

Answer the following questions



- (i) Find the shortest distance of the road from the centre of the village.
- (ii) Which theorem you need to apply to find the shortest distance?
- (iii) What will be the area of the village?
- (iv) What will be the distance a person has to cover if he has to travel between any two points on the boundary and passing through the centre?
- (v) What will be the measure of the angle OAC?

ANSWERS/HINTS

- 1. 128 cm
- 2. $AP = a\sqrt{3}$ units
- 4. 250
- 5. $x = 28^\circ$
- 9. 60 cm^2
- 10. 20 cm
- 13. 10 cm
- 15. $2\sqrt{66}$ cm
- 19. 4.8 cm
- 20.
 - (i) 15 cm
 - (ii) Pythagorus theorem
 - (iii) 706.5 cm^2
 - (iv) 30 cm
 - (v) 90°