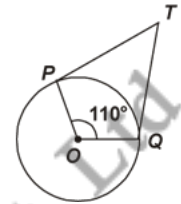


- Q1.** Draw a circle and two lines parallel to a given line such that one is a tangent and the other, a secant to the circle.
- Q2.** A tangent  $PQ$  at a point  $P$  of a circle of radius 5 cm meets a line through the centre  $O$  at a Point  $Q$  so that  $OQ = 12$  cm. Length  $PQ$  is:
- (a) 12 cm                      (b) 13 cm                      (c) 8.5                      (d)  $\sqrt{119}$  cm.
- Q3.** How many tangents can a circle have?

- Q4.** In figure, if  $TP$  and  $TQ$  are the two tangents to a circle with centre  $O$  so that  $\angle POQ = 110^\circ$ , then  $\angle PTQ$  is equal to
- (a)  $60^\circ$                       (b)  $70^\circ$   
(c)  $80^\circ$                       (d)  $90^\circ$



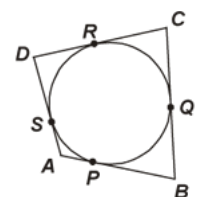
- Q5.** Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.
- Q6.** From a point  $Q$ , the length of the tangent to a circle is 24 cm and the distance of  $Q$  from the centre is 25 cm. The radius of the circle is
- (a) 7 cm                      (b) 12 cm                      (c) 15 cm                      (d) 24.5 cm
- Q7.** Prove that the tangents drawn at the ends of a diameter of a circle are parallel.
- Q8.** The length of a tangent from a point  $A$  at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.
- Q9.** Two tangents  $TP$  and  $TQ$  are drawn to a circle with centre  $O$  from an external point  $T$ . Prove that  $\angle PTO = 2 \angle OPQ$ .
- Q10.** If tangents  $PA$  and  $PB$  from a point  $P$  to a circle with centre  $O$  are inclined to each other at angle of  $80^\circ$ , then  $\angle POA$  is equal to
- (a)  $50^\circ$                       (b)  $60^\circ$                       (c)  $70^\circ$                       (d)  $80^\circ$

- Q11.** Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
- Q12.** Prove that the parallelogram circumscribing a circle is a rhombus.

- Q13.** 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.

- Q14.** A quadrilateral  $ABCD$  is drawn to circumscribe a circle (see figure). Prove that

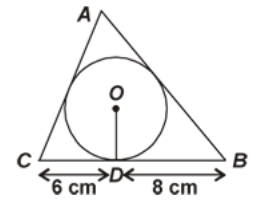
$$AB + CD = AD + BC$$



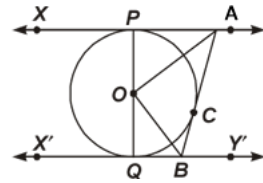
- Q15.** Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

**Q16.** Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.

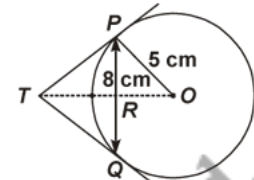
**Q17.** A triangle  $ABC$  is drawn to circumscribe a circle of radius 4 cm such that the segments  $BD$  and  $DC$  into which  $BC$  is divided by the point of contact  $D$  are of lengths 8 cm and 6 cm respectively (see figure). Find the sides  $AB$  and  $AC$ .



**Q18.** In figure,  $XY$  and  $X'Y'$  are two parallel tangents to a circle with centre  $O$  and another tangent  $AB$  with point of contact  $C$  intersecting  $XY$  at  $A$  and  $X'Y'$  at  $B$ . Prove that  $\angle AOB = 90^\circ$ .



**Q19.**  $PQ$  is a chord of length 8 cm of a circle of radius 5 cm. The tangents at  $P$  and  $Q$  intersect at a point  $T$  (see figure). Find the length  $TP$ .



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- S1.** Try yourself
- S2.** (d)  $\sqrt{119}$  cm.
- S3.** Infinitely many.
- S4.** (b)  $70^\circ$ .
- S5.** Proved.
- S6.** (a) 7 cm.
- S7.** Proved.
- S8.** 3 cm.
- S9.** Proved.
- S10.** (a)  $60^\circ$ .
- S11.** Proved.
- S12.** Proved.
- S13.** Proved.
- S14.** Proved.
- S15.** 8 cm.
- S16.** A.
- S17.**  $AB = 15$  cm,  $AC = 13$  cm.
- S18.** Proved.
- S19.**  $TP = \frac{20}{3}$  cm

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