1. Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre of the circle.

2. In the given Fig. 10.1, PA and PB are tangents to the circle drawn from an external point P. If PB = 10 cm, and CA = 2 cm, find the length of PC.

   Answer: 8 cm.

3. The length of the tangent from a point A, at a distance of 5 cm from the centre of the circle is 4 cm. What will be the diameter of the circle? Answer: 6 cm.

4. In the given Fig. 10.2:
   i. AB = AC. Prove that BD = CD.
   ii. A circle touches the side BC.
   If a triangle ABC at a point P and touches AB and AC when produced at B and C respectively, show that \( \frac{AP}{PQ} = \frac{AB}{BC} \).

5. In Fig. 10.3, \( O \) and \( O' \) are centres of two circles.
   Prove that \( PP' = QQ' \).

6. ABC is an isosceles \( \triangle \) in which \( AB = AC \), circumscribing about a circle. Show that \( BC \) is bisected at the point of contact.

7. In the given Fig. 10.4, find the perimeter of \( \triangle ABC \) if \( AP = 10 \text{ cm} \) and \( AC = 6 \text{ cm} \). Find \( \text{CR} \). Answer: 4 cm.

8. If \( a, b, c \) are the sides of a right \( \triangle \) where \( c \) is the hypotenuse, then the radius \( r \) of the circle which touches the sides of the \( \triangle \) is given by \( r = \frac{a+b-c}{2} \).
10. In the given Fig. 10-5, ABC is a right
triangle with angle A = 90°. Such that BC = 6 cm
and AB = 8 cm. Find the radius of the circle.

11. If from an external point B a circle
with centre O, two tangents BC and BD
are drawn such that \( \angle BOC = 120° \). Prove that
\( BC + BD = BO = 10 \), \( BO = 2 BC \).

12. In the given Fig. 11 PA and PB are tangents to the circle
with centre O such that \( \angle APB = 90° \). Find \( \angle OAB \). [Answer 25°]

13. A circle is inscribed in \( \triangle ABC \) having sides 8 cm, 10 cm
and 12 cm as shown in the figure. Find \( AO, BO, OC \).

A. It is known that all sides of a parallelogram
touch a circle, show that the parallelogram is a rhombus.

15. In the Fig., \( \angle B = 90° \), if \( AD = 2 \) cm
\( AB = 2.4 \) cm and \( DS = 15 \) cm
Find the radius (r) of the circle.

16. A quadrilateral \( ABCD \) is drawn to circumscribe a circle
if \( AB = 4 \) cm, \( AP = 7 \) cm, \( BC = 3 \) cm, then find \( AD, AO, BO \).

17. In the given Fig. OB is perpendicular to the chord
AB of a circle whose centre is O. If \( \angle B = 60° \).
What is the distance between two parallel tangents to a circle of
radius 10 cm?

18. In the given Fig. BC is a diameter and
the tangent at P meets BA extended at \( T \). If \( \angle TPA = 30° \)
then find \( \angle TPA \). [Answer 30°]

20. If \( \angle \) is an angle. Two concentric circles of
radii 13 cm and 8 cm. Find the length of the
chord of outer circle which touches the inner circle.