CIRCLES

PROPERTIES OF TANGENT TO A CIRCLE (THEOREM 1 AND 2)

EXERCISE

- **Q.1** Two tangents PA and PB are drawn to the circle with centre O, such that $\angle APB = 120^{\circ}$. Prove that OP = 2AP.
- **Q.2** Prove that the intercept of a tangent between two parallel tangents to a circle subtends a right angle at the centre.
- **Q.3** From a point P, 10 cm away from the centre of a circle, a tangent PT of length 8 cm is drawn. Find the radius of the circle.
- **Q.4** In the given figure, PQ is a chord of length 8cm of a circle of radius 5cm. The tangents at P and Q intersect at a point T. Find the length TP.



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Q.5 In the given figure, the incircle of DABC touches the sides BC, CA and AB at D, E, F respectively.

Prove that

AF + BD + CE = AE + CD + BF

= (perimeter of $\triangle ABC$)



- **Q.6** Prove that the line segment joining the points of contact of two parallel tangents passes through the centre.
- **Q.7** Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre of the circle.
- **Q.8** In the adjoining figure, AB is a diameter of the circle with centre O, AP, BQ and PQ are tangents to the circle.

Prove that $\angle POQ = 90^{\circ}$



- **Q.9** Prove that the tangents drawn from an external point to a circle subtend equal angles at the centre of the circle.
- **Q.10** Prove that in two concentric circles, the chord of the larger circle, which touches the smaller circle, is bisected at the point of contact.

ANSWER KEY

- **3.** 6 cm.
- **4.** 6.67 cm
- **11.** 11 cm
- **12.** 54°