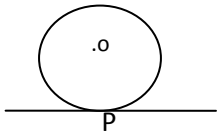
Circles

Important Concepts

Take a look:

Tangent to a circle :

A tangent to a circle is a line that intersects the circle at only one point.



tangent

P= point of contact

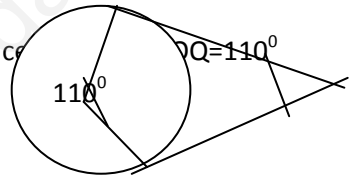
- There is only one tangent at a point on a circle.
- There are exactly two tangents to a circle through a point lying out side the circle.
- The tangent at any point of a circle is perpendicular to the radius through the point of contact.
- The length of tangents drown from an external point to a circle are equal.

Level -1

1. Find the length of the tangent from T which is at a distance of 13 cm from the centre of a circle of radius 5 cm.

   Ans : 12cm.

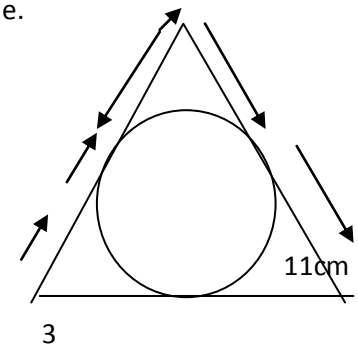
2. In the adjoining figure TP&TQ are two tangents to a circle with c OQ=110^0 then find the angle PTQ.



△ T

Q Ans : 70^0

3. In the adjoining figure ABC is circumscribing a circle. Find the length of BC

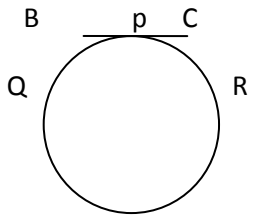


Ans : 10cm

B C

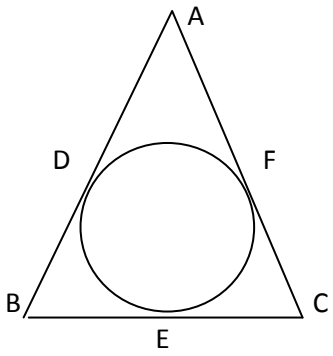
4. In the adjoining figure a circle touches the side BC of Δ ABC. At a point P and touches AB&AC produced at Q and R respectively . If AQ =5 cm find the perimeter of ΔABC.

A Ans-10cm

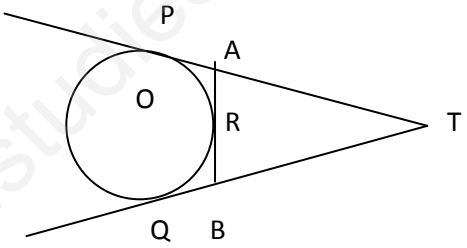


Level-2

1. In the adjoining figure AB=AC. Prove that BE=EC

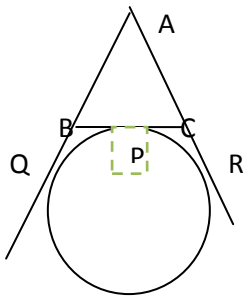


2. TP and TQ are tangents from T to the circle with center o . R is the point on the circle. Prove that
   TA+AR =TB+BR



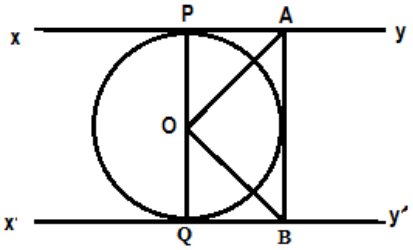
3. Prove that the tangents drown at the ends of a diameter for of a circle are parallel.

4.A circle is touching the side BC of ΔABC at P and touching.
AB and AC produced at Q and R Respectively. Prove that –
AQ= $\frac{1}{2}$ (Perimeter of ΔABC).



Level-3

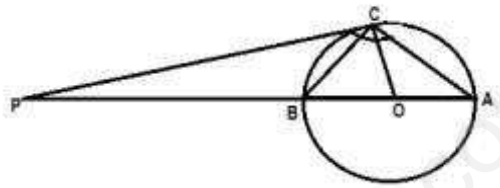
1. Prove that the parallelogram circumscribing a circle is a rhombus.
2. In the adjoining figure XY &X'Y' are two parallel tangents to a, circle with centre o. and another tangent AB with point of contact C intersect XY at A and X'Y' at B is drawn.
   Prove that <AOB = 90^0.



3. 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 point of contact at the centre.

4. The tangent at a point C of a circle and a diameter AB when extended intersect at P. If <PCA= 110^0 ,find <CBA.

Ans: 70^0

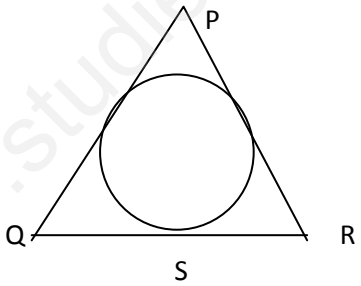


Level-4

1. Prove that the length of tangents drawn from an external point to a circle are equal.
2. Prove that the tangents at any point of a circle is perpendicular to the radius through the point of contact.

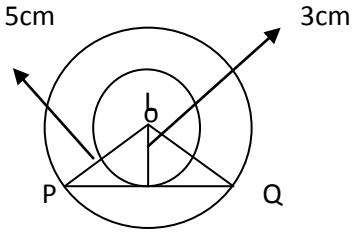
SELF EVALUATION

1. In the adjoining figure if PQ=PR
Prove that QS= SR.



2. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that AB+CD= AD+BC.

3.Two concentric circles are of radii 5cm. and 3cm. Find the length of the chord of the longer circle which touches the smaller circle.



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