

1. A quadrilateral $ABCD$ is drawn to circumscribe a circle (see Figure-1).
Prove that $AB + CD = AD + BC$. ssssi

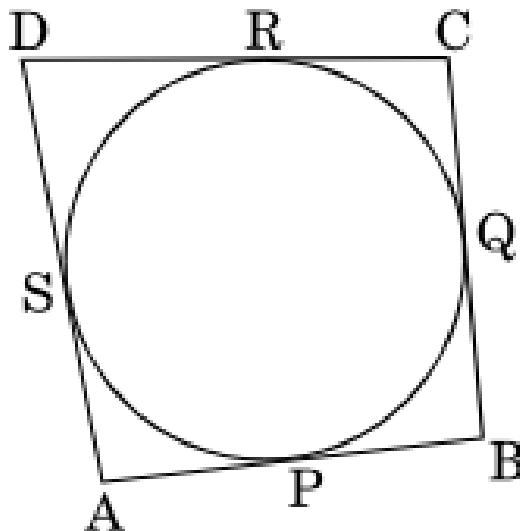


Figure 1:

2. Draw a pair of tangents to a circle of radius 4cm which are inclined to each other at an angle of 45° .
3. A point \mathbf{T} is 13cm away from the centre of a circle. The length of the tangent drawn from \mathbf{T} to the circle is 12cm . Find the radius of the circle.
4. Two tangents TP and PQ are drawn to a circle with centre \mathbf{O} from an external point \mathbf{T} . Prove that $\angle PTQ = 2\angle OPQ$.
5. PQ is a tangent to a circle with centre \mathbf{O} at the point \mathbf{P} on the circle. If $\triangle OPQ$ is an isosceles triangle, then find $\angle OQP$.
6. Two concentric circles have radii 10cm and 6cm . Find the length of the chord of the larger circle which touches the smaller circle.
7. If tangents PA and PB from an external point \mathbf{P} to a circle with centre \mathbf{O} are inclined to each other at an angle of 70° , then find $\angle POA$.
8. ABC is right triangle, right-angled at \mathbf{B} with $BC = 6\text{cm}$ and $AB = 8\text{cm}$. A circle with centre \mathbf{O} and radius r cm has been inscribed in $\triangle ABC$ as shown in the figure. Find the value of r .

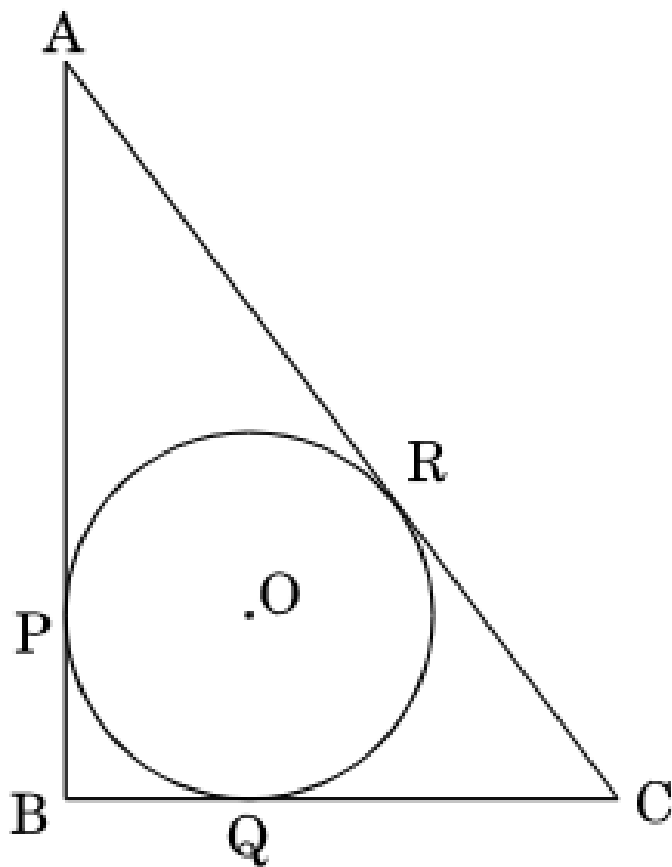


Figure 2:

9. Draw a circle of radius 5cm . From a point 8cm away from its centre, construct a pair of tangents to the circle.
10. In the given figure, PT and PS are tangents to a circle with centre \mathbf{O} , from a point \mathbf{P} , such that $PT = 4\text{cm}$ and $\angle TPS = 60^\circ$. Find the length of the chord TS . Also, find the radius of the circle.

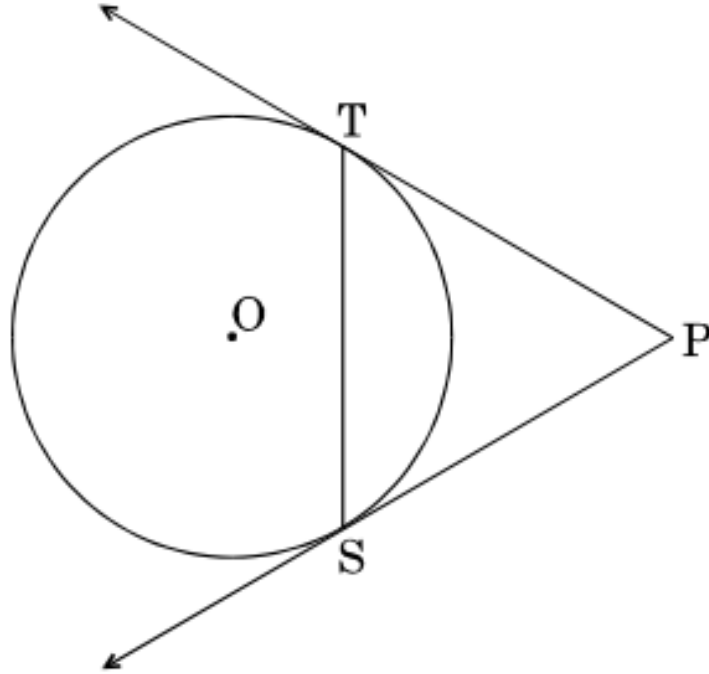


Figure 3:

11. (a) In a right triangle ABC , right-angled at B , $BC = 6\text{cm}$ and $AB = 8\text{cm}$. A circle is inscribed in the $\triangle ABC$. Find the radius of the incircle.
 (b) Two circles touch externally at P and AB is a common tangent, touching one circle at A and the other at B . Find the measure of $\angle APB$.
12. From an external point P , tangents PQ and PR are drawn to a circle with centre O , touching the circle at Q and R . If $\angle QOR = 140^\circ$, find the measure of $\angle QPR$.
13. A circle touches all the sides of a quadrilateral $ABCD$. Prove that $AB + CD = DA + BC$.
14. Write the steps of construction of a circle of diameter 6cm and drawing of a pair of tangents to the circle from a point 5cm away from the centre.