Exercise: 10.1 **(Page No: 209)**

1. How many tangents can a circle have?
Answer:
There can be **infinite** tangents to a circle. A circle is made up of infinite points which are at an equal distance from a point. Since there are infinite points on the circumference of a circle, infinite tangents can be drawn from them.

2. Fill in the blanks:
(i) A tangent to a circle intersects it in .... point(s).
(ii) A line intersecting a circle in two points is called a ....
(iii) A circle can have .... parallel tangents at the most.
**(iv) The common point of a tangent to a circle and the circle is called ....**

Answer:
(i) A tangent to a circle intersects it in **one** point(s).
(ii) A line intersecting a circle in two points is called a **secant.**
(iii) A circle can have **two** parallel tangents at the most.
(iv) The common point of a tangent to a circle and the circle is called the **point of contact.**

3. 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 cm
(D) √119 cm

Answer:
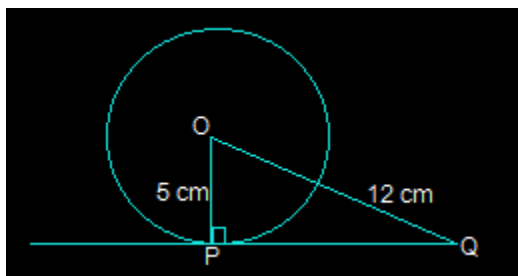
In the above figure, the line that is drawn from the centre of the given circle to the tangent PQ is perpendicular to PQ.

And so, OP ⊥ PQ

Using Pythagoras theorem in triangle ΔOPQ we get,

$OQ^2 = OP^2 + PQ^2$

$\Rightarrow (12)^2 = 5^2 + PQ^2$

$\Rightarrow PQ^2 = 144 - 25$

$\Rightarrow PQ^2 = 119$
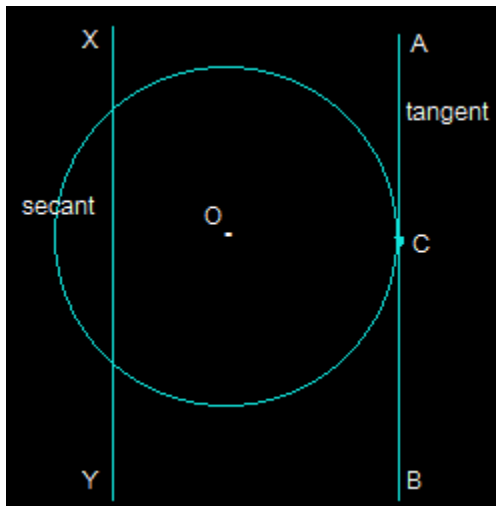
$\Rightarrow PQ = \sqrt{119}$ cm

So, **option D** i.e. √119 cm is the length of PQ.

4. 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.

Answer:

In the above figure, XY and AB are two the parallel lines. The line segment AB is the tangent at point C while the line segment XY is the secant.