

**Exercise: 10.1**

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**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 in 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 .....

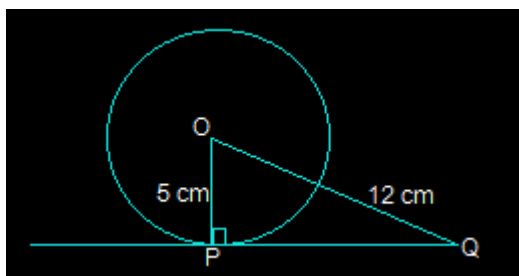
**Answer:**

- (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)  $\sqrt{119}$  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,  $OP \perp PQ$

Using Pythagorean theorem in triangle  $\Delta OPQ$  we get,

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

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

$$\Rightarrow PQ^2 = 144 - 25$$

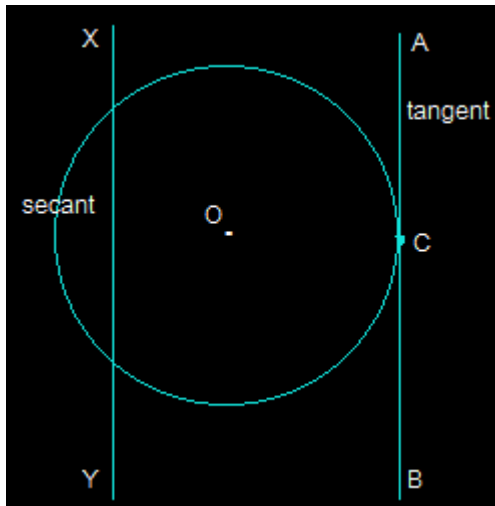
$$\Rightarrow PQ^2 = 119$$

$$\Rightarrow PQ = \sqrt{119} \text{ cm}$$

So, **option D** i.e.  $\sqrt{119}$  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.