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## Class X : MATH

### Chapter 10 : CIRCLE

### Questions & Answers - Exercise : 10.1 - NCERT Book

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**Q1.** How many tangents can a circle have?

**Sol.** There can be infinitely many tangents to a circle.

**Q2.** 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.....

**Sol.** (i) One

(ii) Secant

(iii) Two

(iv) Point of contact.

**Q3.** 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.

(1) 12 cm

(2) 13 cm

(3) 8.5 cm

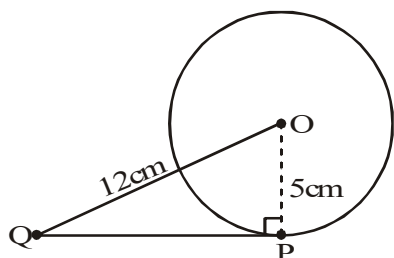
(4)  $\sqrt{119}$  cm

**Sol.** O is the centre of the circle. The radius of the circle is 5 cm.

PQ is tangent to the circle at P. Then

$$OP = 5 \text{ cm and } \angle OPQ = 90^\circ.$$

We are given that OQ = 12 cm.



By Pythagoras Theorem, we have

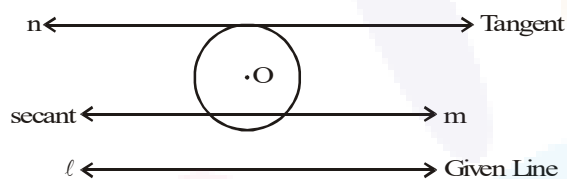
$$\begin{aligned} PQ^2 &= OQ^2 - OP^2 \\ &= (12)^2 - (5)^2 = 144 - 25 = 119 \end{aligned}$$

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

Hence, the correction option is (D).

**Q4.** Draw a circle and two lines parallel to a given line such that one is tangent and other a secant to the circle.

**Sol.** We have the required figure, as shown



Here,  $l$  is the given line and a circle with centre  $O$  is drawn.

The line  $n$  is drawn which is parallel to  $l$  and tangent to the circle. Also,  $m$  is drawn parallel to line  $l$  and is a secant to the circle.

$$\begin{aligned} &= \frac{1}{2} \times 4 \times a + \frac{1}{2} \times 4 \times b + \frac{1}{2} \times 4 \times c \\ &= 2(a + b + c) = 2 \times 2s = 4s \\ &= 4(x + 14) \text{ cm}^2 \quad \dots(2) \end{aligned}$$

From (1) and (2),  $\sqrt{48x \times (x+14)} = 4 \times (x + 14)$

$$\Rightarrow 48x \times (x + 14) = 16 \times (x + 14)^2$$

$$\Rightarrow 3x = x + 14 \quad \Rightarrow x = 7 \text{ cm}$$

Then  $AB = c = (x + 8) \text{ cm} = (7 + 8) \text{ cm} = 15 \text{ cm}$

and  $AC = b = (x + 6) \text{ cm} = (7 + 6) \text{ cm} = 13 \text{ cm}$