Circles: Exercise 10.1

Q.1 How many tangents can a circle have?

Sol. An infinite number of tangents

Q.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 _____.

Sol. Fill in the blanks:

(i) A tangent to a circle intersects it in exactly 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 point of contact.

Q.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 of PQ is :

(A) 12 cm (B) 13 cm (C) 8.5 cm (D) $\sqrt{119}$ cm

Sol. Since, radius of circle (OP) from point P and tangent on circle PQ are perpendicular to each other.

So, in right angled triangle OPQ, by Pythagoras theorem:

$$PQ = \sqrt{OQ^2 - OP^2}$$

$$= \sqrt{12^2 - 5^2}$$

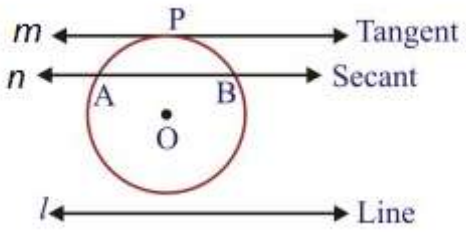
$$= \sqrt{144 - 25}$$

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

So, correct option: (D)

Q.4 Draw a circle and two lines parallel to a given line such that one is tangent and the other, a secant to the circle.

Sol. The required figure is:



In figure, ℓ is the given line and a circle of centre O is drawn.

Line *m* is line drawn || to line ℓ and is the tangent to the circle.

n is line drawn || to line ℓ and is the secant.