CLASS 10 MATHEMATICS

Ch 10 – CIRCLES

Ex 10.1

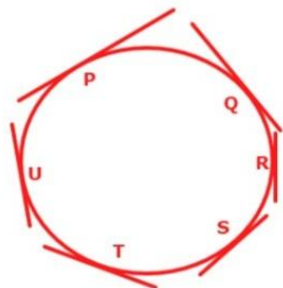**1. How many tangents can a circle have?**

Answer:

A circle can have infinite tangents to a circle.

We know that A circle is made up of infinite points which are at an equal distance from a point.

So there are infinite points on the Circumference of a circle,

Infinite tangents can be drawn from them.

Infinite tangents

2. Fill in the blanks:

(i) A tangent to a circle intersects it in .... point(s).

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 ....

Answer (ii)

A line intersecting a circle in two points is called a secant.

(iii) A circle can have .... parallel tangents at the most.

Answer: (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 ....

Answer (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 :
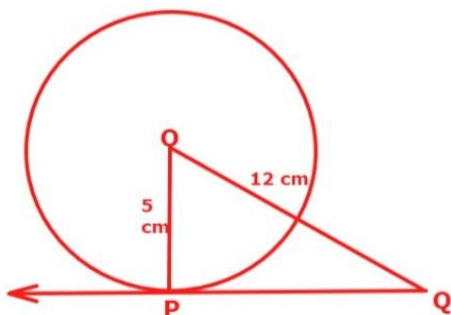
(A) 12 cm

(B) 13 cm

(C) 8.5 cm

(D) √119 cm

Answer:

In this figure,

the line OP is perpendicular to tangent PQ.

i.e. OP $\perp$ PQ

Using Pythagoras theorem in triangle ΔOPQ,

Where Angle P = 90°

i.e. $(\text{Hypotenuse})^2 = (\text{base})^2 + (\text{perpendicular})^2$

thus,

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

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

$144 = 25 + PQ^2$

$PQ^2 = 144 - 25$

$PQ^2 = 119$

$PQ = \sqrt{119}$ cm
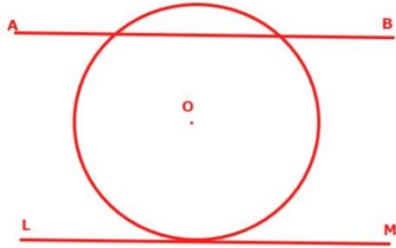
Therefore,

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 figure,

LM and AB are the two parallel lines.

The line segment AB is the secant and

the line segment LM is the Tangent.