Circles Ex 10.1 Q1

Answer :

(i) We know that the tangent to a circle is that line which touches the circle at exactly one point. This point at which the tangent touches the circle is known as the 'point of contact'.
Therefore we have,
The common point of the tangent and the circle is called Point of contact.
(ii) We know that the tangent is perpendicular to the radius of the circle at the point of contact. This also means that the tangent is perpendicular to the diameter of the circle at the point of contact. The diameter of the circle can have at the most one more perpendicular line at the other end where it touches the circle. The perpendicular line at the other end of the diameter is the tangent.
Also we know that two lines which are perpendicular to a common line will be parallel to each other.
Therefore,
A circle may have two parallel tangents.
(iii) From the very basic definition of tangent we know that tangent is a line that intersects the circle at exactly one point. Therefore we have,
A tangent to a circle intersects it in one point.
(iv) From the definition of a secant we know that any line that intersects the circle at 2 points is a secant.
Therefore, we have
A line intersecting a circle in two points is called a secant.
(v) One of the properties of the tangent is that it is perpendicular to the radius at the point of contact.
Therefore,
The angle between the tangent at the point of contact on a circle and the radius through the point is $90°$.

Circles Ex 10.1 Q2

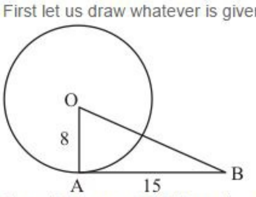
Answer :

We know that circle is made of infinite points which are located at a fixed distance from a particular point. Since at each of these infinite points a tangent can be drawn, we can have infinite number of tangent for a given circle.

Circles Ex 10.1 Q3

Answer :

First let us draw whatever is given in the question. This will help us understand the problem better.



Since the tangent will always be perpendicular to the radius we have drawn *OA* perpendicular to *AB*. To find the length of *OB* we have to use Pythagoras theorem.

$$OB^2 = OA^2 + AB^2$$

$$OB^2 = 8^2 + 15^2$$

$$OB^2 = 64 + 225$$

$$OB^2 = 289$$

$$OB = \sqrt{289}$$

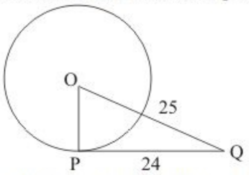
$$OB = 17$$

Therefore, length of *OB* is 17 cm.

Circles Ex 10.1 Q4

Answer :

Let us first draw whatever is given so that we can understand the problem better.



Since the tangent to a circle is always perpendicular to the radius of the circle at the point of contact, we have drawn *OP* perpendicular to *PQ*. Thus we have a right triangle with one of its sides as the radius.

To find the radius we have to use Pythagoras theorem.

$$OP^2 = OQ^2 - PQ^2$$
$$OP^2 = 25^2 - 24^2$$
$$OP^2 = (25-24)(25+24)$$
$$OP^2 = 1\times 49$$
$$OP^2 = 49$$
$$OP = \sqrt{49}$$
$$OP = 7$$

Therefore the radius of the circle is 7 cm.

*********** END **********