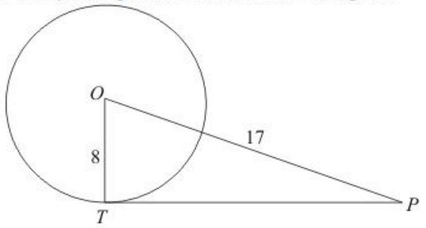
Circles Ex 10.2 Q1

Answer :

Let us put the given data in the form of a diagram.



We have to find TP. From the properties of tangents we know that a tangent will always be at right angles to the radius of the circle at the point of contact. Therefore $\angle OTP$ is a right angle and triangle *OTP* is a right triangle.

We can find the length of *TP* using Pythagoras theorem. We have,

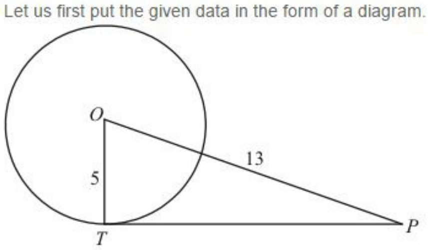
$$TP^2 = OP^2 - OT^2$$
$$TP^2 = 17^2 - 8^2$$
$$TP^2 = (17-8)(17+8)$$
$$TP^2 = 9 \times 25$$
$$TP^2 = 225$$
$$TP = \sqrt{225}$$
$$TP = 15$$

Therefore, the length of *TP* is 15 cm.

Circles Ex 10.2 Q2

Answer :

Let us first put the given data in the form of a diagram.



We have to find TP. From the properties of tangents we know that a tangent will always be at right angles to the radius of the circle at the point of contact. Therefore $\angle OTP$ is a right angle and triangle *OTP* is a right triangle.

We can find the length of *TP* using Pythagoras theorem. We have,

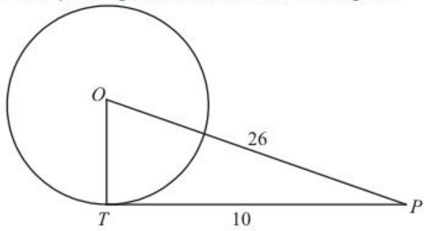
$$TP^2 = OP^2 - OT^2$$
$$TP^2 = 13^2 - 5^2$$
$$TP^2 = (13-5)(13+5)$$
$$TP^2 = 8 \times 18$$
$$TP^2 = 144$$
$$TP = \sqrt{144}$$
$$TP = 12$$

Therefore, the length of *TP* is 12 cm.

Circles Ex 10.2 Q3

Answer :

Let us put the given data in the form of a diagram.



We have to find *OT*. From the properties of tangents we know that a tangent will always be at right angles to the radius of the circle at the point of contact. Therefore $\angle OTP$ is a right angle and triangle *OTP* is a right triangle.

We can find the length of *TP* using Pythagoras theorem. We have,

$$OT^2 = OP^2 - TP^2$$
$$OT^2 = 26^2 - 10^2$$
$$OT^2 = (26-10)(26+10)$$
$$OT^2 = 16 \times 36$$
$$OT^2 = 576$$
$$TP = \sqrt{576}$$
$$TP = 24$$

Therefore, the radius of the circle is 24 cm.

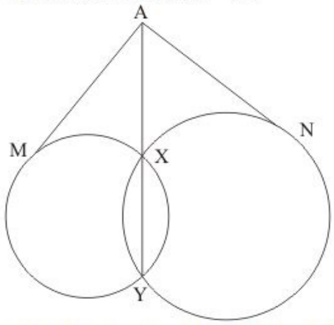
Circles Ex 10.2 Q4

Answer :

Let the two circles intersect at points X and Y. XY is the common chord.

Suppose A is a point on the common chord and AM and AN be the tangents drawn from A to the circle.

We need to show that AM = AN.



In order to prove the above relation, following property will be used.

"Let PT be a tangent to the circle from an external point P and a secant to the circle through P intersects the circle at points A and B, then $PT^2 = PA \times PB$".

Now, AM is the tangent and AXY is a secant.

$\therefore AM^2 = AX \times AY$ ...(1)

AN is the tangent and AXY is a secant.

$\therefore AN^2 = AX \times AY$ ...(2)

From (1) and (2), we have

$AM^2 = AN^2$

$\therefore AM = AN$

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