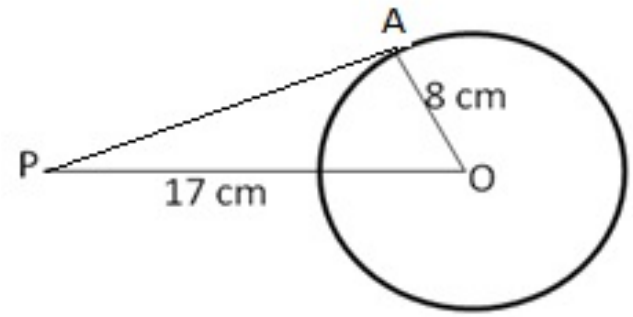
Exercise 12

Question 1:

PA is the tangent to the circle with center O and radius AO = 8 cm.
The point P is at a distance of 17 cm from O.
In Δ PAO, A = 90°,



By Pythagoras theorem:

$$PO^2 = PA^2 + AO^2$$

$$\text{or } PA^2 = PO^2 - AO^2$$

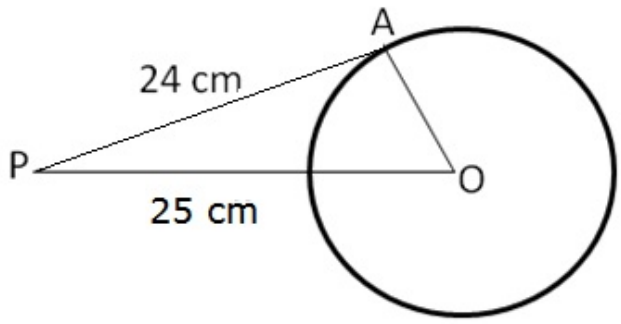
$$\Rightarrow PA = \sqrt{(17)^2 - (8)^2} \text{ cm}$$

$$= \sqrt{289 - 64} \text{ cm}$$

$$= \sqrt{225} \text{ cm} = 15\text{cm}$$

Hence, the length of the tangent = 15 cm.

Question 2:
PA is the tangent to the circle with centre O and radius, such that
PO = 25 cm, PA = 24 cm
In Δ PAO, A = 90°,



By Pythagoras theorem:

$$PO^2 = PA^2 + AO^2$$

$$\text{or } OA^2 = PO^2 - PA^2$$

$$\Rightarrow OA^2 = (25)^2 - (24)^2 \text{ cm}$$

$$= (25 + 24)(25 - 24) \text{ cm}$$

$$= 49 \text{ cm}$$

$$\therefore OA = 7\text{cm}$$

Hence, the radius of the circle is 7 cm.

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