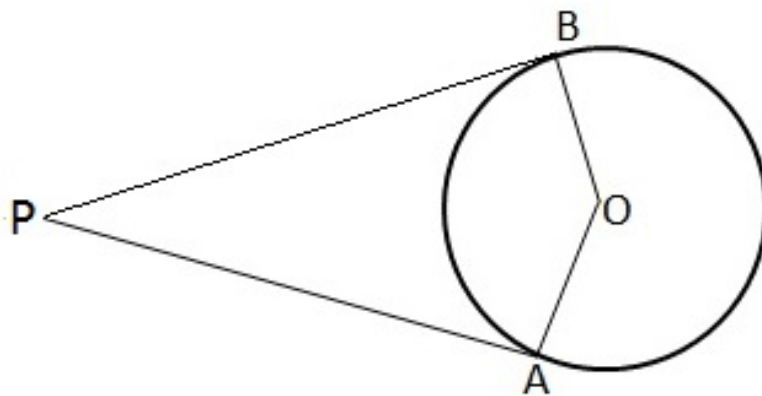




### Exercise 12

Question 3:

Given AP is a tangent at A and OA is radius through A and PA and PB are the tangent segments to circle with centre O.  
Therefore, OA is perpendicular to AP, similarly, OB is perpendicular to BP.



$$\therefore \angle OAP = 90^\circ$$

$$\text{And } \angle OBP = 90^\circ$$

$$\text{So, } \angle OAP = \angle OBP = 90^\circ$$

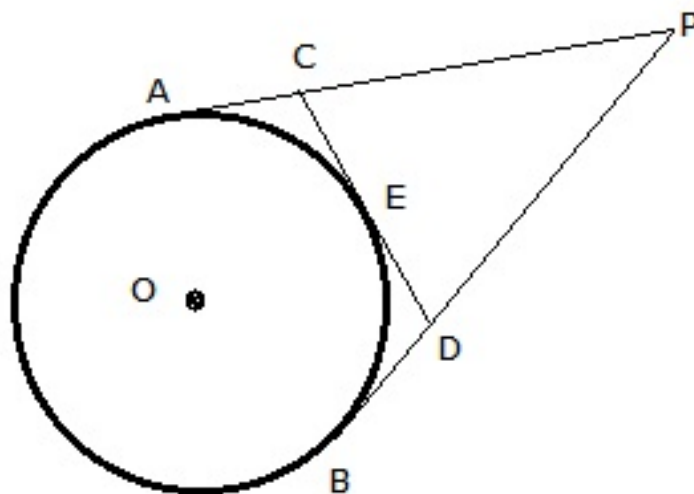
$$\therefore \angle OBP + \angle OAP = (90^\circ + 90^\circ) = 180^\circ$$

Thus, the sum of opposite angles of quad.  $\Delta OBP$  is  $180^\circ$

$\therefore \Delta OBP$  is a cyclic quadrilateral

Question 4:

Given: From an external point P, tangent PA and PB are drawn to a circle with centre O. CD is the tangent to the circle at a point E and PA = 14cm.



Since the tangents from an external point are equal, we have

$$PA = PB,$$

$$\text{Also, } CA = CE \text{ and } DB = DE$$

$$\text{Perimeter of } \Delta PCD = PC + CD + PD$$

$$= (PA - CA) + (CE + DE) + (PB - DB)$$

$$= (PA - CE) + (CE + DE) + (PB - DE)$$

$$= (PA + PB) = 2PA = (2 \times 14) \text{ cm}$$

$$= 28 \text{ cm}$$

Hence, Perimeter of  $\Delta$  PCD = 28 cm

\*\*\*\*\* END \*\*\*\*\*