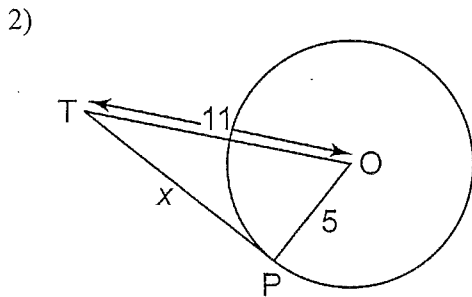
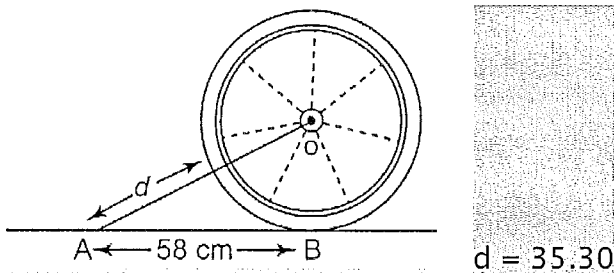


$\angle x = 67^\circ, y = 12$

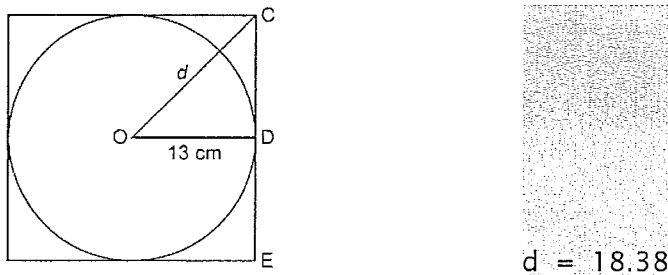


**9.8**

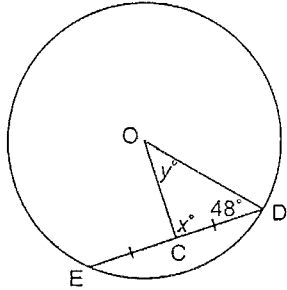
A wheel has radius 30 cm. It rolls along the ground toward a tack that is 58 cm from the point where the wheel currently touches the ground. What is the distance,  $d$ , between the tack and the closest point on the circumference of the wheel? Give the answer to the nearest tenth of a centimetre.



4) A circular plate has radius 13 cm. It is packed in a square cardboard frame whose 4 edges just touch the plate. What is the distance,  $d$ , from the centre of the plate to a corner of the frame? Give the answer to the nearest tenth of a centimetre.

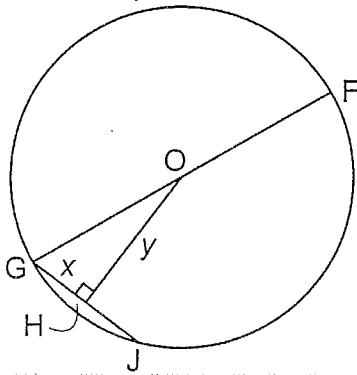


- 5) Point O is the centre of the circle. Determine the values of  $x^\circ$  and  $y^\circ$ .



$\angle x = 90^\circ, \angle y = 42^\circ$

- 6) Point O is the centre of the circle;  $OF = 18$  cm; and  $GJ = 14$  cm. Determine the values of  $x$  and  $y$  to the nearest tenth of a centimetre where necessary.



$x = 7, y = 16.58$

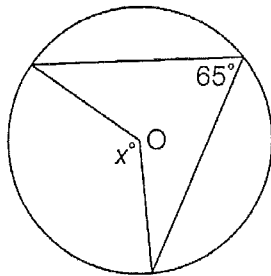
- 7) A circle has diameter 22 cm. Two chords are drawn on opposite sides of the centre of the circle. One chord is 16 cm long and the other chord is 12 cm long.

- a) Which chord is closer to the centre of the circle?  
b) How much closer to the centre is this chord?

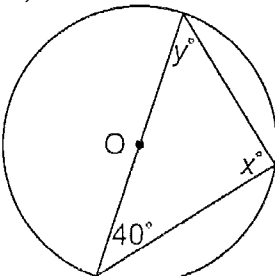
1.67 cm closer

- 8) Point O is the centre of each circle. Determine the values of  $x^\circ$  and  $y^\circ$ . Justify your solutions.

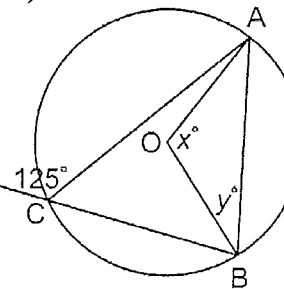
a)



b)

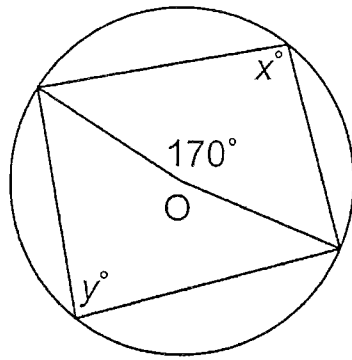


c)



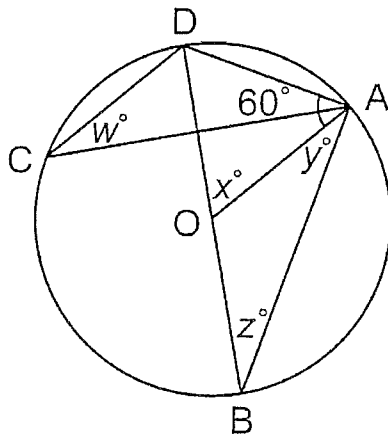
a)  $\angle x = 130^\circ$  b)  $\angle x = 90^\circ, \angle y = 50^\circ$  c)  $\angle x = 110^\circ, \angle y = 35^\circ$

9)



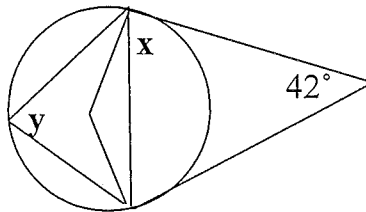
$$\angle x = 95^\circ, \angle y = 85^\circ$$

10)



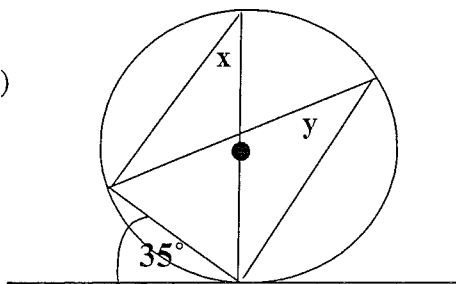
$$\angle x = 60^\circ, \angle y = \angle z = \angle w = 30^\circ$$

11)



$$\angle x = 69^\circ, \angle y = 69^\circ$$

12)



$$\angle x = 35^\circ, \angle y = 35^\circ$$