

Section A: Multiple Choice. Circle the letter of the correct response. (15 points)

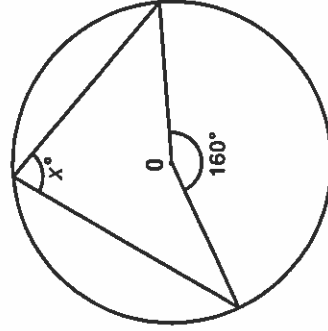
1. In the circle with Centre O shown, what is the value of x ?

(A) 80°

(B) 160°

(C) 200°

(D) 320°



2. What is the value of x ?

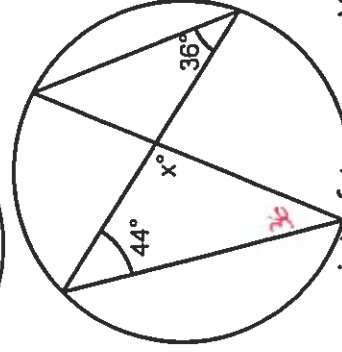
(A) 80°

(B) 92°

(C) 100°

(D) 108°

$44 + 36 + x = 180$
 $x = 100^\circ$



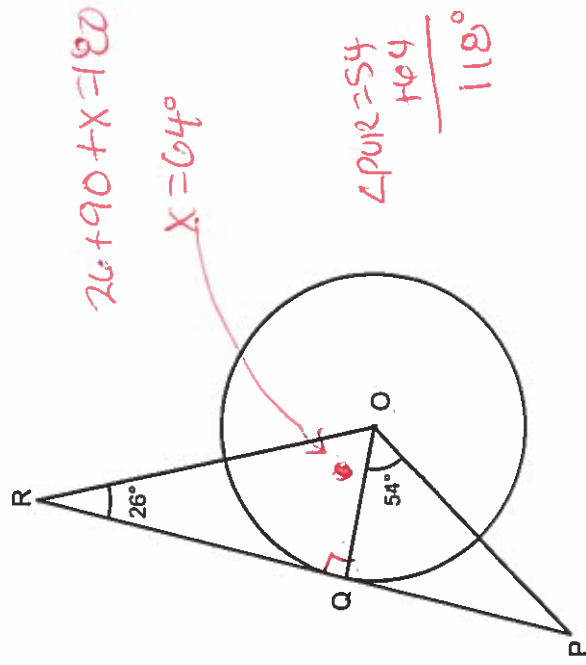
3. In the circle with Centre O shown, point Q is a point of tangency. What is the measure of $\angle POR$?

(A) 90°

(B) 64°

(C) 108°

(D) 118°



$26 + 90 + x = 180$
 $x = 64^\circ$
 $\angle POR = 54 + 64 = 118^\circ$

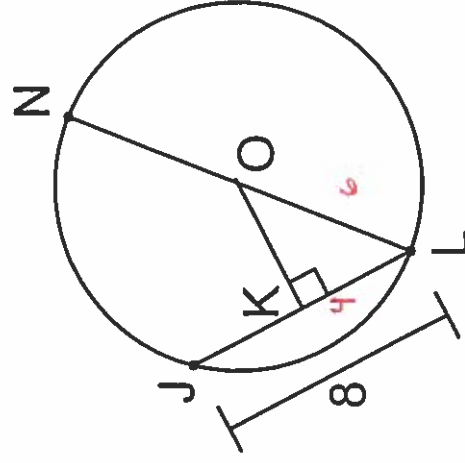
4. In the circle with Centre O shown, the diameter is 12 cm. What is the length of KO to the nearest tenth?

(A) 2.0

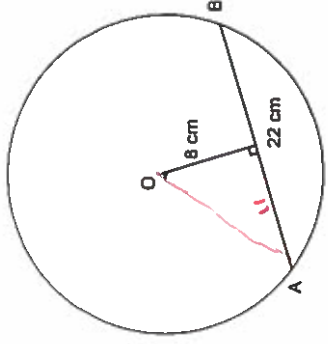
(B) 4.0

(C) 4.5

(D) 7.2



5. In the circle with centre O shown, chord \overline{AB} is 22 cm long and is 8 cm from the centre. What is the length, in cm, of OA ?



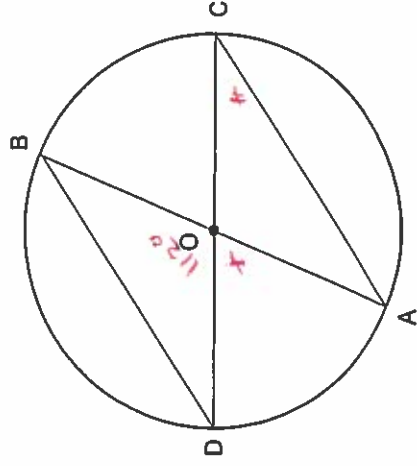
- (A) 13.6
(B) 15.0
(C) 20.5
(D) 27.2

$$22 \div 2 = 11$$

$$11^2 + 8^2 = 185$$

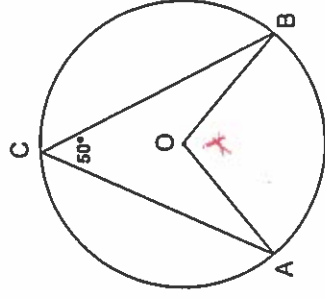
$$\sqrt{185} = 13.6$$

6. In the circle with centre O shown, $\angle DOB = 112^\circ$. What is the measure of $\angle DCA$?



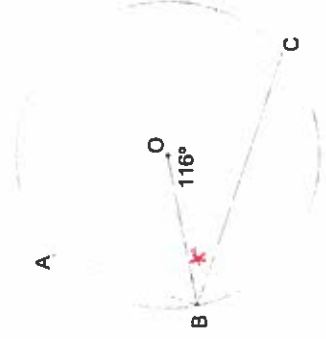
- (A) 90
(B) 112
(C) 34
(D) 68

7. In the circle with centre O shown, $\angle ACB = 50^\circ$. What is the measure, in degrees, of $\angle AOB$?



- (A) 25
(B) 50
(C) 100
(D) 90

8. In the circle with centre O shown, $\angle BOC = 116^\circ$. What is the measure, in degrees, of $\angle OBC$?



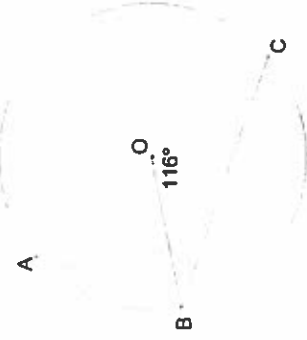
- (A) 32
(B) 64
(C) 90
(D) 116

$$180 - 116 = 64$$

$$64 \div 2 = 32$$

$$\angle OBC = 32^\circ$$

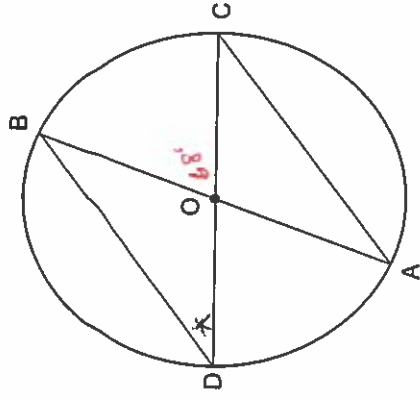
9. In the circle with centre O shown, $\angle BOC = 116^\circ$. What is the measure, in degrees, of $\angle BAC$?



- (A) 232
(B) 52
(C) 58
(D) 64

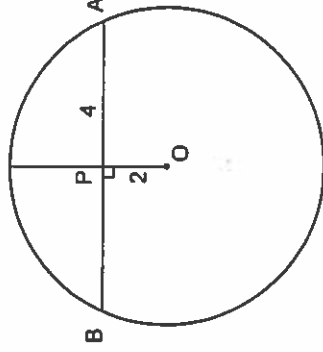
10. In the circle with centre O shown, the measure of $\angle BOC$ is 68° . What is the measure, in degrees, of $\angle BDC$?

(A) 34
 (B) 68
 (C) 136
 (D) 146



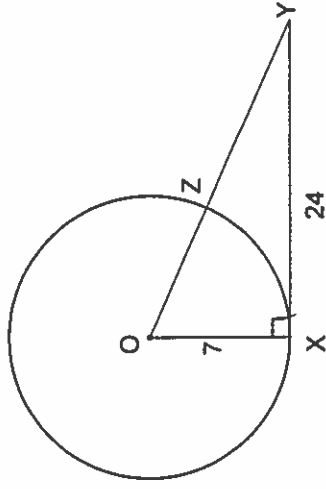
11. In the circle with centre O shown, $\overline{PA} = 4$ and $\overline{PO} = 2$. What is the length of \overline{BP} ?

(A) 2
 (B) 4
 (C) 8
 (D) 4.5



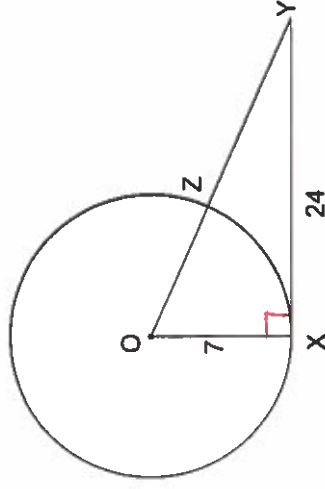
12. In the circle with centre O shown, what is the length of \overline{YO} if \overline{YX} is tangent to the circle at X ?

(A) 16
 (B) 18
 (C) 23
 (D) 25



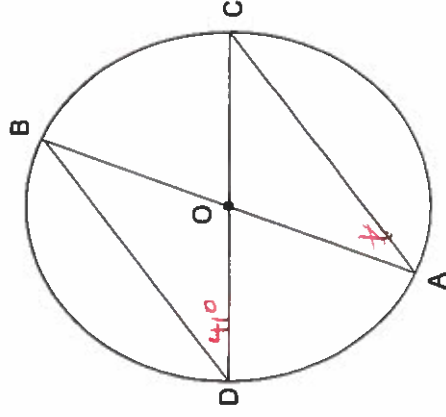
13. In the circle with centre O shown, what is the measure, in degrees, of $\angle OXY$ if \overline{YX} is tangent to the circle at X ?

(A) 25
 (B) 45
 (C) 90
 (D) 100



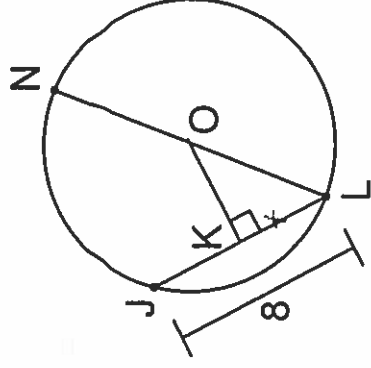
14. In the circle with centre O shown, the measure of $\angle BDC$ is 41° . What is the measure, in degrees, of $\angle BAC$?

(A) 82
 (B) 41
 (C) 20.5
 (D) 90



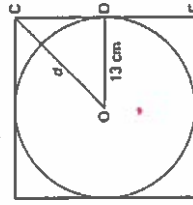
15. In the circle with Centre O shown, what is the length of KL?

- (A) 2
 (B) 3
 (C) 4
 (D) 7



SECTION B: Answer all questions in the space provided. Workings are required. (25 points)

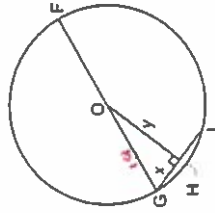
1. A circular plate has radius 13 cm. It is packed in a square cardboard frame whose 4 edges just touch the plate. What is the distance, d , from the centre of the plate to a corner of the frame? Show all workings. (Give the answer to the nearest tenth of a centimetre.) Value 5



$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 13^2 + 13^2 &= c^2 \\
 169 + 169 &= c^2 \\
 338 &= c^2 \\
 c &= \sqrt{338} \\
 &= 18.4
 \end{aligned}$$

2. Point O is the centre of the circle; OF = 18 cm; and GJ = 14 cm.

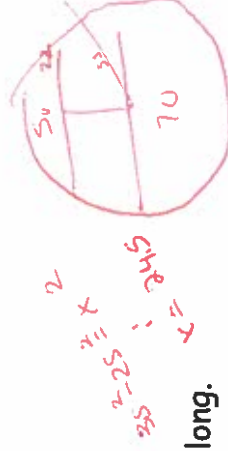
Determine the values of x and y to the nearest tenth of a centimetre where necessary. Show workings. (Note: x refers to the length of GH and y refers to the length of OH). Value 5



$$GH = \frac{1}{2} GJ = 7 \text{ cm} = x$$

$$18^2 - 7^2 = y^2$$

$$y = 16.6$$

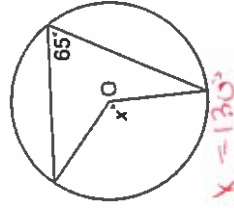


3. A circle has diameter 70 cm. A chord in the circle is 50 cm long.

How far is the chord from the centre of the circle? Give the answer to the nearest tenth of a centimetre. Sketch a diagram and show workings. Value 5

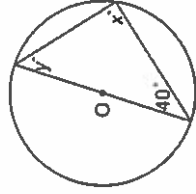
4. Point O is the centre of each circle. Determine the values of x° and y° . Value 5

a)



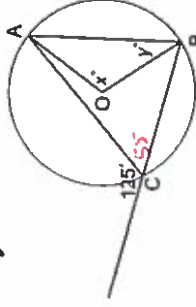
$$x = 13.0^\circ$$

b)



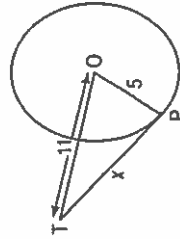
$$\begin{aligned}
 \text{OR: } x &= 90^\circ \\
 y &= 50^\circ
 \end{aligned}$$

c)



$$\begin{aligned}
 x &= 110^\circ \\
 y &= \frac{1}{2} 70 \\
 &= 35^\circ
 \end{aligned}$$

5. Point O is the centre of the circle. Point P is a point of tangency. Determine the value of x to the nearest tenth. Show workings. Value 5



$$11^2 - 5^2 = x^2$$

$$121 - 25 = x^2$$

$$96 = x^2$$

$$x = \sqrt{96} = 9.7$$