Circle

Exercise 15

1.

length of Cord $\overline{AB}$ = 2.5 cm

2.
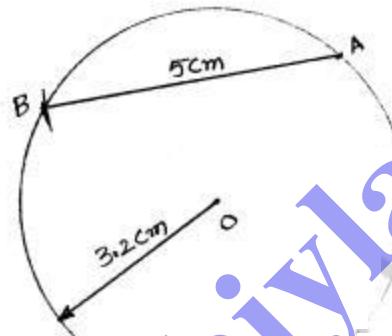
3.

Given

radius of Circle = 3 cm

$\overline{OB}$ = 5 cm
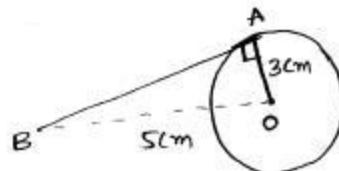
$\triangle$ AOB is a right angled triangle

$OB^2 = OA^2 + AB^2$

$5^2 = 3^2 + AB^2$

$25 = 9 + AB^2$

$AB^2 = 25 - 9 \Rightarrow AB^2 = 16$

$\underline{AB = 4 cm}$

4.

Given

$CP = 20 cm$

$PT = 16 cm$.
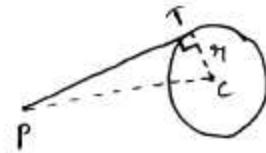
In $\triangle$ PTC

$$PC^2 = PT^2 + TC^2$$

$$20^2 = 16^2 + r^2$$

$$r^2 = 20^2 - 16^2$$

$$= 400 - 256$$

$$r^2 = 64$$

$$r = \sqrt{64}$$

$$r = 8cm$$

r - Radius of Circle

∴ Radius of circle = 8cm

5.

(i) $x = 90 - 32 = 58°$ (∵ Angle in Semi circle = 90°)

$y = 90 - 50 = 40°$ (∵ Angle in Semicircle = 90°)

(ii) $y = 90 - 37°$ (∵ Angle in rectangle)

$y = 53°$

$x = 90 - 53° = 37°$

(iii) $2x = 90°$ (∵ Angle in Semi circle = 90°)

$x = 45°$

(iv)

(iv)

$112° + \angle ABC = 180°$

$\angle ABC = 180 - 112°$

$\angle ABC = \mathbf{58°}$

$x + \angle ABC = 90°$ $\quad (\because$ Angle in semi circle $= 90°)$

$x = 90 - \angle ABC$

$x = 90 - \mathbf{58°}$

$x = 32°$

$\boxed{x = 32°}$
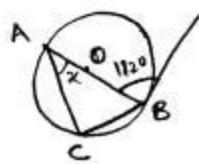
(v)

$x + 40° = 90$

$(\because$ Angle in semi circle $90°)$
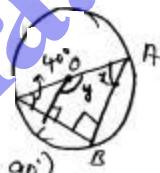
$x = 90 - 40$

$\underline{\underline{x = 50°}}$

$x + y = 180$ $\quad (\because$ Sum of angle in quadrilatere is equal to $360°)$

In $OABC$

$x + y + 90 + 90 = 360$

$x + y + 180 = 360$

$x + y = 180$

$50 + y = 180$

$y = 180 - 50$

$\underline{y = 130°}$

In $\triangle ABC$
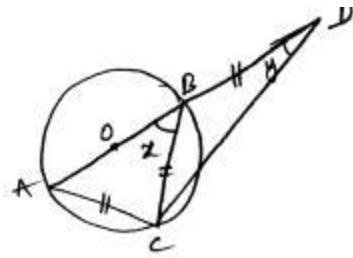
$\therefore \angle ABC = \angle BAC = x$

$(\because BC = AC)$

$\angle ABC + \angle BAC + \angle ACB = 180°$

$(\because \angle ACB = 90°)$

$x + x + 90 = 180$

$2x = 90$

$x = \dfrac{90}{2}$

$$\boxed{x = 45°}$$

$\angle ABC + \angle CBD = 180°$

$45 + \angle CBD = 180°$

$\angle CBD = 180 - 45$

$\angle CBD = 135°$

$\angle BCD = \angle BDC$ $(\because BD = BC)$
$\quad\quad\quad = y$

$\angle BCD + \angle BDC + \angle CDB = 180°$

$y + y + 135 = 180$

$2y = 45$

$y = 22.5°$

5

(vii)

$$x + 65 = 90°$$
$$x = 90 - 65$$
$$x = 25°$$
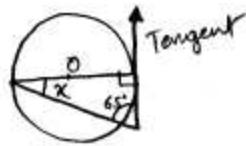
(viii)
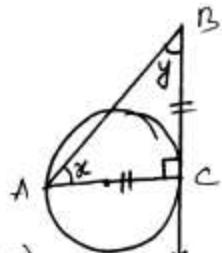
$$\angle x = \angle y \quad (\because$$
$$\angle BAC = \angle ABC \quad \infty$$
$$(\because BC = AC)$$
$$x = y$$
$$x + y = 90$$
$$x + x = 90$$
$$2x = 90$$
$$\boxed{x = 45°} \quad \boxed{y = 45°}$$

(ix)

$$\because \angle OCA = 90°$$
$$x + 36 = 90°$$
$$x = 90 - 36°$$
$$x = 54°$$