Exercise 11.3

① circumference of circle = $2\pi r$, r = radius of circle

(a) $r = 14$ Cm

circumference of circle = $2\pi r$

$= 2 \times \frac{22}{7} \times 14^2$

$= 88$ Cm

(b) $r = 28$ mm

Circumference of circle $= 2\pi r$

$= 2 \times \frac{22}{7} \times 28^4$

$= 176$ mm

(c) $r = 21$ Cm H.W.

② Area of Circle = πr^2

(a) $r = 14$ mm

Area of circle = πr^2

$= \frac{22}{7} \times (14)^2$

$= \frac{22}{7} \times 14 \times 14^2$

$= 616$ mm^2

(b) diameter = 49 m.

$\therefore$ diameter $= 2r = 49$

$r = \frac{49}{2}$ m

Area of circle = πr^2

$= \frac{22}{7} \times \left(\frac{49}{2}\right)^2$

$= \frac{22}{7}^{11} \times \frac{49}{2} \times \frac{49}{2}^{7} = \frac{3773}{2}$

$= 1886.5$ m^2

(c) $r = 5$ Cm

Area = $\pi r^2 = \frac{22}{7} \times (5)^2$

$= \frac{22}{7} \times 5 \times 5 = \frac{550}{7}$ Cm^2

③ circumference of a circular sheet = 154 m

Circumference of circle = $2\pi r$

$\therefore 2\pi r = 154$

$2 \times \frac{22}{7} \times r = 154$

$r = \frac{154 \times 7}{2 \times 22} = \frac{49}{2}$

$r = \frac{49}{2} = 24.5$ m

Area of Circular Sheet = πr^2

$= \frac{22}{7} \times \left(\frac{49}{2}\right)^2$

$= \frac{22}{7}^{11} \times \frac{49}{2} \times \frac{49}{2}^{7} = \frac{3773}{2} = 1886.5$ m^2

(4) Diameter of garden = 21 m

$d = 21$ m

$\therefore r = \frac{21}{2}$ m

Circumference of circular garden $= 2\pi r$

$= 2 \times \frac{22}{7} \times \frac{21}{2} = 66$ m

Length of wire required to make 2 rounds of fence

= 2 × circumference of circular garden

$= 2 \times 66 = 132$ m

Cost of 1 m of rope = ₹ 4

" " 132 m " = ₹ 4×132

= ₹ 528

(5) $R = 4$ Cm, $r = 3$ Cm

Area of outer circular sheet $= \pi R^2$

$= 3.14 \times 4^2$

$= 3.14 \times 16 = 50.24$ Cm^2

Area of inner circular sheet $= \pi r^2$

$= 3.14 \times 3^2$

$= 3.14 \times 9 = 28.26$ Cm^2

Area of remaining sheet

= Area of outer sheet − area of inner sheet

$= 50.24 - 28.26$

$= 21.98$ Cm^2

(6) Diameter of circular table cover = 1.5 m (3)

$d = 1.5$ m

$r = \frac{1.5}{2}$ m

lace is to be put on the edge of circular table cover.

∴ length of lace required

= circumference of circular table cover

$= 2\pi r$

$= 2 \times 3.14 \times \frac{1.5}{2} = 3.14 \times 1.5$

$= 4.710 = 4.71$ m

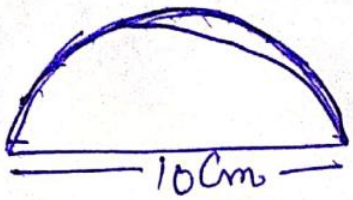
Cost of 1 m of the lace = ₹ 15

" " 4.71 m " = ₹ 15×4.71

= ₹ 70.65

(7) $d = 10$ Cm

$r = \frac{10}{2} 5 = 5$ Cm



Perimeter of semi circle

$= \frac{1}{2} \times 2\pi r = \pi r$

$= 3.14 \times 5 = 15.70 = 15.7$ Cm

Perimeter of the figure

= Perimeter of semi circle + diameter of semi circle

= 15.7 + 10

= 25.7 Cm

(8) Diameter of circular table top = 1.6 m (4)

$d = 1.6\ m$

$r = \frac{1.6}{2}\ m = \frac{16}{20}\ m = \frac{8}{10}\ m$

Area of circular table top $= \pi r^2$

$= 3.14 \times \left(\frac{8}{10}\right)^2$

$= \frac{314}{100} \times \frac{8}{10} \times \frac{8}{10} = \frac{20096}{10000} = 2.0096\ m^2$

Cost of polishing table-top at the rate of ₹15/m²

$= ₹\ 15 \times 2.0096$

$= ₹\ 30.144$

(9) Length of wire = 44 Cm

Wire is bent into the shape of a circle.

∴ circumference of circle = length of wire

$2\pi r = 44$

$2 \times \frac{22}{7} \times r = 44$

$r = \frac{44 \times 7}{2 \times 22} = 7$

$\boxed{r = 7\ Cm}$

Area of circle $= \pi r^2 = \frac{22}{7} \times (7)^2$

$= \frac{22}{7} \times 7 \times 7 = 154\ Cm^2$

Same wire is bent into the shape of a square.

∴ Perimeter of square = length of wire

$4 \times Side = 44\ Cm$

$Side = \frac{44}{4} = 11$

Side of square = 11 Cm

Area of Square = Side × Side

$= 11 \times 11$

$= 121 \text{ Cm}^2$

$154 > 121$

∴ Circle encloses more area.

(10) Radius of circular card sheet = 14 Cm

∴ $R = 14$ Cm

Area $= \pi R^2$

$= \frac{22}{7} \times 14^2 \quad = \frac{22}{7} \times 14 \times 14^2$

$= 616 \text{ Cm}^2$

Radius of inner circle = 3.5 Cm

$r = 3.5$ Cm

Area " " $= \pi r^2$

$= \frac{22}{7} \times (3.5)^2$

$= \frac{11}{\cancel{22}} \times \frac{\cancel{35}}{\cancel{10}\ 2} \times \frac{\cancel{35}}{\cancel{10}\ \cancel{2}} = \frac{77}{2} \text{ Cm}^2$

Area of 2 inner circles $= 2 \times \frac{77}{2} = 77 \text{ Cm}^2$

Length of rectangle = 3 Cm

Breadth " " = 1 Cm

Area " " $= 3 \times 1$

$= 3 \text{ Cm}^2$

Area of the remaining sheet

= Area of outer circle − area of 2 inner circles − area of rectangle

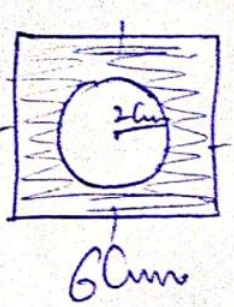
$= 616 - 77 - 3 = 536 \text{ Cm}^2$

(11) Side of square piece of sheet = 6 Cm

Area " " = Side × Side

= 6 × 6

= 36 Cm^2



Radius of circle = 2 Cm

r = 2 Cm

Area of circle = πr^2

= $3.14 \times (2)^2$

= $3.14 \times 2 \times 2$ = 12.56 Cm^2

Circle is cut out from square piece of sheet.

∴ Area of left over aluminium sheet

= Area of square sheet − area of circle

= 36 − 12.56

= 23.44 Cm^2

(12) Circumference of a circle = 31.4 Cm

$2\pi r = 31.4$

$2 \times 3.14 \times r = 31.4$

$r = \frac{31.4}{2 \times 3.14}$

$= \frac{314 \times 10^{5}}{10 \times 2 \times 314} = 5$

$\boxed{r = 5 \text{ Cm}}$

∴ Area of circle = πr^2

$= 3.14 \times (5)^2$

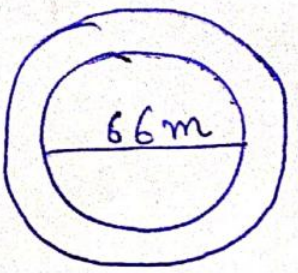
$= 3.14 \times 25$

$= 78.50 = 78.5 \text{ Cm}^2$

(13) Diameter of flower bed = 66m

$d = 66\ m$

$r = \frac{66}{2} = 33\ m$



width of path = 4 m

∴ Radius of outer circle = r + width of path

$R = 33 + 4$

$= 37\ cm$

Area of the path = Area of outer circle − area of inner circular flower bed

$= \pi R^2 - \pi r^2$

$= \pi (R^2 - r^2)$

$= 3.14 (37^2 - 33^2)$

$= 3.14 (1369 - 1089)$

$= 3.14 \times 280$

$= 879.20 = 879.2\ m^2$

(14) Area of flower bed $= 314\ m^2$

Now $r = 12\ m$

Area to be covered by the sprinkler $= \pi r^2$

$= 3.14 \times (12)^2$

$= 3.14 \times 12 \times 12$

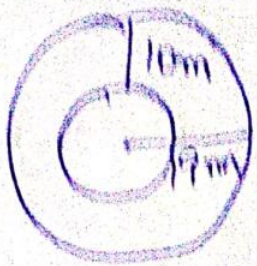
$= 3.14 \times 144$

$= 452.16\ m^2$

∵ $452.16 > 314$

∴ Sprinkler will water the entire garden.

(15) $R = 19\ m$



Circumference of outer circle
$= 2\pi R$
$= 2 \times 3.14 \times 19$
$= 119.32\ m$

$r = R - \text{width}$
$= 19 - 10 = 9\ m$

Circumference of inner circle $= 2\pi r$
$= 2 \times 3.14 \times 9$
$= 56.52\ m$

(16) Radius of wheel $= 28\ Cm$
$r = 28\ Cm$

Distance covered by wheel in one rotation
= Circumference of wheel
$= 2\pi r$
$= 2 \times \frac{22}{7} \times 28 = 176\ Cm$

Total distance $= 352\ m$
$= 352 \times 100\ Cm$
$= 35200\ Cm$

No. of revolutions $= \frac{\text{Total distance}}{\text{Distance covered in 1 rotation}}$

$= \frac{35200}{176} = 200$

(17) Length of minute hand of a circular clock = 15 cm

$\therefore r = 15$ cm

Distance covered by the tip of minute hand in 1 hour = circumference of circular clock

$= 2\pi r$

$= 2 \times 3.14 \times 15$

$= 94.20$

$= 94.2$ cm