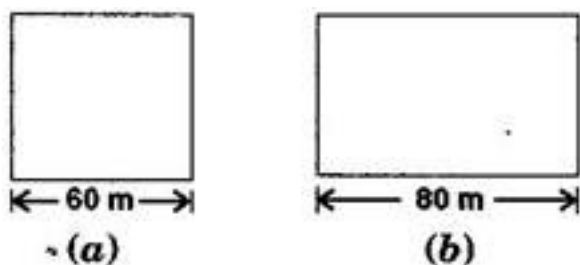


CBSE Class –VIII Mathematics
NCERT Solutions
CHAPTER - 11
Mensuration (Ex. 11.1)

1. A square and a rectangular field with measurements as given in the figure have the same perimeter.



Which field has a larger area?

Ans. Given: The side of a square = 60 m and the length of rectangular field = 80 m

According to question,

Perimeter of rectangular field = Perimeter of square field

$$\Rightarrow 2(l+b) = 4 \times \text{Side}$$

$$\Rightarrow 2(80+b) = 4 \times 60$$

$$\Rightarrow (80+b) = \frac{240}{2}$$

$$\Rightarrow (80+b) = 120$$

$$\Rightarrow b = 120 - 80$$

$$\Rightarrow b = 40 \text{ m}$$

Hence, the breadth of the rectangular field is 40 m.

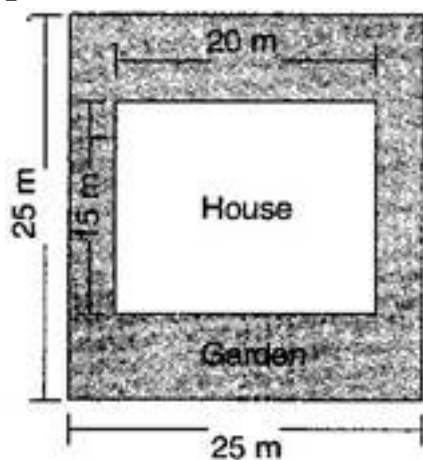
Now, Area of Square field = $(\text{Side})^2$

$$= (60)^2 \text{ sq.m} = 3600 \text{ sq.m}$$

Area of Rectangular field = (length \times breadth)
 $= 80 \times 40 \text{ sq. m} = 3200 \text{ sq. m}$

Hence, area of square field is larger.

2. Mrs. Kaushik has a square plot with the measurement as shown in the figure. She wants to construct a house in the middle of the plot. A garden is developed around the house. Find the total cost of developing a garden around the house at the rate of Rs. 55 per m^2 .



Ans. Side of a square plot = 25 m

$$\therefore \text{Area of square plot} = (\text{Side})^2 = (25)^2 = 625 \text{ m}^2$$

Length and Breadth of the house is 20 m and 15 m respectively

$$\therefore \text{Area of the house} = (\text{length} \times \text{breadth})$$

$$= 20 \times 15 = 300 \text{ m}^2$$

Area of garden = Area of square plot – Area of house

$$= (625 - 300) = 325 \text{ m}^2$$

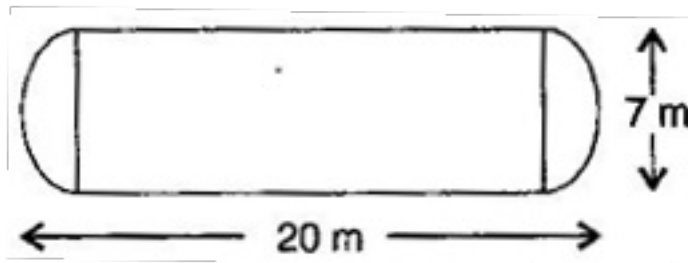
\therefore Cost of developing the garden around the house is Rs.55

$$\therefore \text{Total Cost of developing the garden of area } 325 \text{ sq. m} = \text{Rs.}(55 \times 325)$$

$$= \text{Rs.}17,875$$

3. The shape of a garden is rectangular in the middle and semi-circular at the ends as shown in the diagram. Find the area and the perimeter of this garden

[Length of rectangle is $20 - (3.5 + 3.5)$ meters]



Ans. Given: Total length of the diagram = 20 m

Diameter of semi circle on both the ends = 7 m

$$\therefore \text{Radius of semi circle} = \frac{\text{Diameter}}{2} = \frac{7}{2} = 3.5 \text{ m}$$

Length of rectangular field = [Total length - (radius of semicircle on both side)]

$$= \{20 - (3.5 + 3.5)\}$$

$$= 20 - 7 = 13 \text{ m}$$

Breadth of the rectangular field = 7 m

\therefore Area of rectangular field = (l x b)

$$= (13 \times 7) \Rightarrow 91 \text{ m}^2$$

$$\text{Area of two semi circles} = 2 \times \frac{1}{2} \pi r^2$$

$$= 2 \times \frac{1}{2} \times \frac{22}{7} \times 3.5 \times 3.5 = 38.5 \text{ m}^2$$

$$\text{Total Area of garden} = (91 + 38.5) \Rightarrow 129.5 \text{ m}^2$$

$$\text{Perimeter of two semi circles} = 2 \times \pi r = 2 \times \frac{22}{7} \times 3.5$$

$$= 22 \text{ m}$$

Hence, Perimeter of garden = $(22 + 13 + 13)\text{m} = 48\text{ m}$

4. A flooring tile has the shape of a parallelogram whose base is 24 cm and the corresponding height is 10 cm. How many such tiles are required to cover a floor of area 1080 m^2 ? [If required you can split the tiles in whatever way you want to fill up the corners]

Ans. Base of flooring tile = 24 cm \Rightarrow 0.24 m

height of a flooring tile = 10 cm \Rightarrow 0.10 m [1cm = 1/100 m]

Now, **Area of flooring tile** = **Base \times Altitude**

$$= 0.24 \times 0.10 \text{ sq. m}$$

$$= 0.024 \text{ m}^2$$

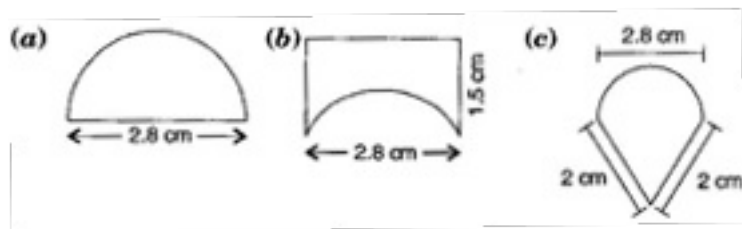
$$\therefore \text{Number of tiles required to cover the floor} = \frac{\text{Area of floor}}{\text{Area of one tile}}$$

$$= \frac{1080}{0.024}$$

$$= 45000 \text{ tiles}$$

Hence 45000 tiles are required to cover the floor.

5. An ant is moving around a few food pieces of different shapes scattered on the floor. For which food-piece would the ant have to take a longer round? Remember, circumference of a circle can be obtained by using the expression $c = 2\pi r$, where r is the radius of the circle.



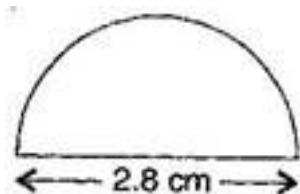
Ans. (a) Radius = $\frac{\text{Diameter}}{2} = \frac{2.8}{2}$

= 1.4 cm

Circumference of semi circle = πr

= $\frac{22}{7} \times 1.4 \Rightarrow 4.4$ cm

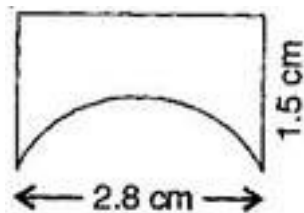
Total distance covered by the ant = (Circumference of semi circle + Diameter)



= (4.4 + 2.8) cm

= 7.2 cm

(b) Diameter of semi circle = 2.8 cm



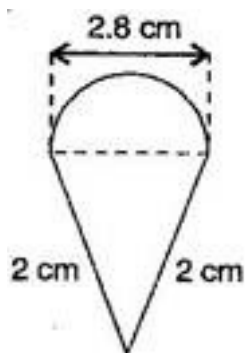
Radius = $\frac{\text{Diameter}}{2} = \frac{2.8}{2} = 1.4$ cm

Circumference of semi circle = πr

= $\frac{22}{7} \times 1.4 \Rightarrow 4.4$ cm

Total distance covered by the ant = (1.5 + 2.8 + 1.5 + 4.4) $\Rightarrow 10.2$ cm

(c) Diameter of semi circle = 2.8 cm



$$\text{Radius} = \frac{\text{Diameter}}{2} = \frac{2.8}{2}$$

$$= 1.4 \text{ cm}$$

$$\text{Circumference of semi circle} = \pi r$$

$$= \frac{22}{7} \times 1.4 \Rightarrow 4.4 \text{ cm}$$

$$\text{Total distance covered by the ant} = (2 + 2 + 4.4) = 8.4 \text{ cm}$$

Hence for figure (b) food piece, the ant would take a longer round.