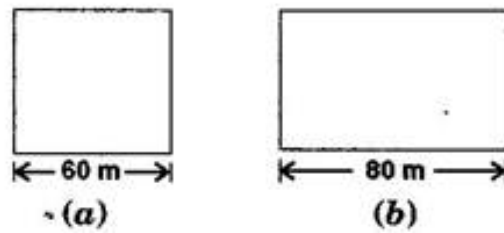




NCERT solutions for class 8 maths chapter 11 mensuration

Q1. 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

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

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

$$\Rightarrow 160 + 2b = 240$$

$$\Rightarrow 2b = 240 - 160$$

$$\Rightarrow 2b = 80$$

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

Now Area of Square field

$$= (\text{Side})^2$$

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

And Area of Rectangular field

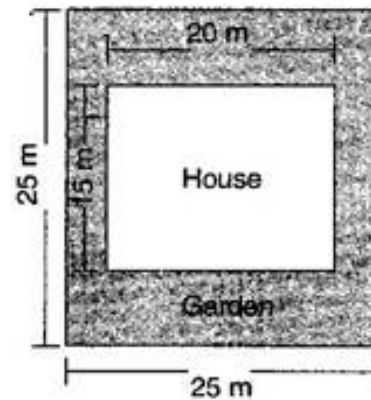
$$= \text{length} \times \text{breadth} = 80 \times 40$$

$$= 3200 \text{ m}^2$$

Hence, area of square field is larger.

Q2. 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 ₹ 55

per m^2 .

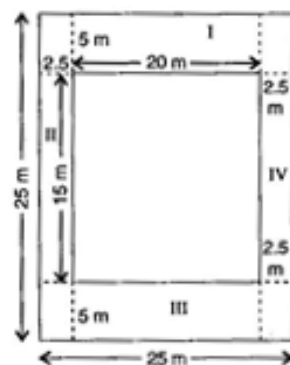


Ans. Side of a square plot = 25 m

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

$$= (25)^2 = 625 \text{ m}^2$$

Length of the house = 20 m and



Breadth of the house = 15 m

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

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

$$\text{Area of garden} = \text{Area of square plot}$$

$$- \text{Area of house}$$

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

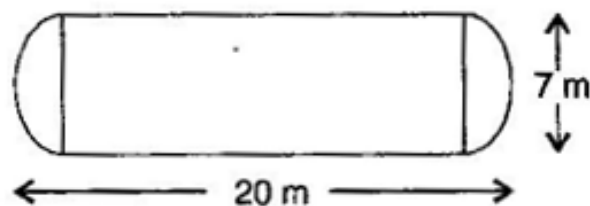
$$\therefore \text{Cost of developing the garden per sq. m} = ₹ 55$$

$$\therefore \text{Cost of developing the garden } 325 \text{ sq. m} = ₹ 55 \times 325$$

$$= ₹ 17,875$$

Hence total cost of developing a garden around is ₹ 17,875.

Q3. 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 = 20 m

Diameter of semi circle = 7 m

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

Length of rectangular field

$$= 20 - (3.5 + 3.5) = 20 - 7 = 13 \text{ m}$$

Breadth of the rectangular field = 7 m

$$\therefore \text{Area of rectangular field} = l \times b$$

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

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

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

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

$$\text{Now Perimeter of two semi circles} =$$

$$2 \times \pi r = 2 \times \frac{22}{7} \times 3.5 = 22 \text{ m}$$

$$\text{And Perimeter of garden}$$

$$= 22 + 13 + 13$$

$$= 48 \text{ m}$$

Q4. 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]

$$\text{Ans. Given: Base of flooring tile} = 24 \text{ cm}$$

$$= 0.24 \text{ m}$$

$$\text{Corresponding height of a flooring tile}$$

$$= 10 \text{ cm} = 0.10 \text{ m}$$

$$\text{Now Area of flooring tile}$$

$$= \text{Base} \times \text{Altitude}$$

$$= 0.24 \times 0.10$$

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

∴ Number of tiles required to cover the floor

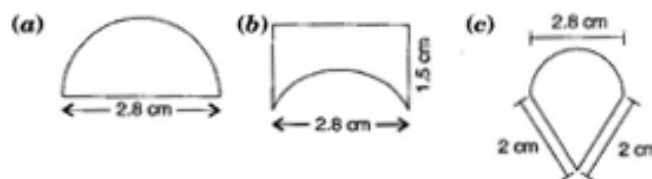
$$= \frac{\text{Area of floor}}{\text{Area of one tile}}$$

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

$$= 45000 \text{ tiles}$$

Hence 45000 tiles are required to cover the floor.

Q5. 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.

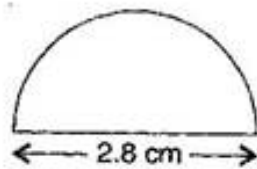


$$\text{Ans. (a) Radius} = \frac{\text{Diameter}}{2} = \frac{2.8}{2}$$

$$= 1.4 \text{ cm}$$

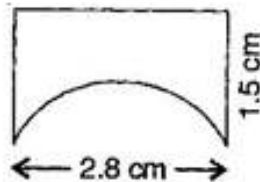
$$\text{Circumference of semi circle} = \pi r$$

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



Total distance covered by the ant
 = Circumference of semi circle + Diameter
 = $4.4 + 2.8 = 7.2$ cm

(b) Diameter of semi circle = 2.8 cm



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

cm

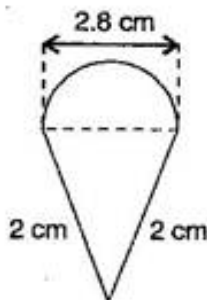
Circumference of semi circle = πr

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

Total distance covered by the ant

$$= 1.5 + 2.8 + 1.5 + 4.4 = 10.2 \text{ cm}$$

(c) Diameter of semi circle = 2.8 cm



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

$$= 1.4 \text{ cm}$$

Circumference of semi circle = πr

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

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.

***** END *****

