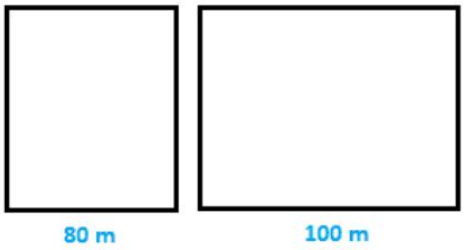
NCERT SOLUTIONS CLASS-8 MATHS
CHAPTER-11 EXERCISE-11.1

1. A rectangle and a square field with given measurements have the same perimeter are given below in the figure. Which of the following has larger area?



Solution:

Perimeter of square = 4 × side of square

= 4 × 80

= 320 m

Perimeter of rectangle = 2 × (length + breadth)

= 2 × (100 + breadth)

= 200 + (2 × breadth)

But perimeter of both the fields is same

Therefore,

320 = 200 + (2 × breadth)

120 = 2 × breadth

Breadth = 60 m

Area of square = $(side)^2$

= $(80m)^2$

= 6400 m^2

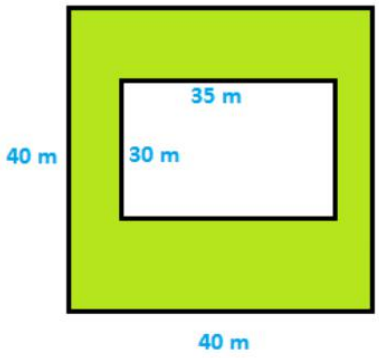
Area of rectangle = Length × breadth

= (100 × 60) m^2

= 6000 m^2

Therefore, Area of square is larger compared to area of rectangle.

2. Mrs. Sharma has a square plot with measurements as given in the figure. She wants to build house at the center of the plot and garden around the house. Find the cost of developing the garden at the cost of Rs 60 per m^2.



Solution:

Area of square plot = $(40m)^2$

= 1600 m^2

Area of house = Length × breadth

= (30 × 35) m^2

= 1050 m^2

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

= (1600 – 1050) m^2

= 550 m^2

Cost of developing the garden = 60 per m^2

Therefore, the total cost of developing the garden area 550 m^2

= Rs(550× 60)

= Rs 33000

3. A rectangular garden is in the middle and has semicircular ends as shown in the figure. Find the perimeter and the area of the garden.

[Length of rectangle = 30 – (7 + 7) metres]

Solution:

Length of rectangle = 30 – (7 + 7) metres

= 16metres

Circumference of one semi – circle = πr

= $(\frac{22}{7} \times 7)$

= 22 metres

Circumference of two semi – circle = 2× πr

= 2 × 22

= 44 metres

Perimeter of garden = PQ + perimeter of both the semi – circles + RS

= 16 + 44 + 16

= 76 metres

Area of garden = Area of rectangle + 2 × area of semicircles

= $[(16 \times 14) + (2 \times \frac{1}{2} \times \frac{22}{7} \times (7)^2)] \, m^2$

= (224 + 154) metres

= 378 metres

4. A flooring tile has parallelogram shape, its base is 30 cm, and height is 10 cm. How many tiles will be required to cover an area of 1110 m^2?

Solution:

Area of a tile = base × height

= 30 × 10

= 300 cm^2

Number of tiles required = $\frac{Areaoffloor}{Areaofeachtile}$

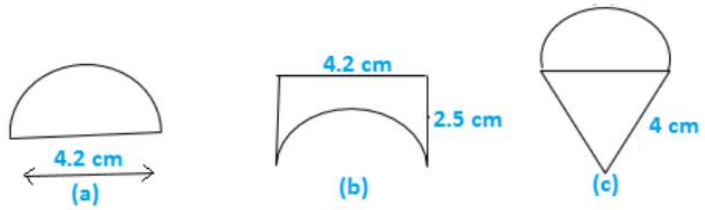
= $\frac{1110m^2}{300cm^2}$

= $\frac{(1110 \times 10000)cm^2}{300cm^2}$

= 37000 tiles

5. An ant is moving around food pieces of various shapes lying on the floor. For which food piece would ant have to take a longer route?

(Circumference = 2πr, where r is radius)



Solution:

(a) Radius = $\frac{4.2}{2}$ cm

= 2.1 cm

Perimeter of the piece = 4.2 cm + πr

= (4.2 + $\frac{27}{7} \times 2.1$) cm

= 10.8 cm

(b) Radius = $\frac{4.2}{2}$ cm

= 2.1 cm

Perimeter of the piece = [2.5 + 4.2 + 2.5 + π(2.1)] cm

= [9.2 + ($\frac{22}{7} \times 2.1$)] cm

= [9.2 + 6.6] cm

= 15.8 cm

(c) Radius = $\frac{4.2}{2}$ cm

= 2.1 cm

Perimeter of the piece = 4 cm + πr cm + 4 cm

= (8 + $\frac{22}{7} \times 2.1$) cm

= 8 + 6.6 cm

= 14.6 cm

Therefore, the ant will have to take longer route for the second food piece (b), because the perimeter of the second figure is the greatest compared to other two.