

# NCERT SOLUTIONS

CLASS - 7TH



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Class : 7th  
Subject : Maths  
Chapter : 11

Chapter Name : Perimeter and Area

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Exercise 11.1

Q1 The length and the breadth of a rectangular piece of land are 500 m and 300 m respectively. Find (i) its area (ii) the cost of the land, if 1  $m^2$  of the land costs Rs 10,000.

Answer. (i) Area = Length x Breadth  
 $= 500 \times 300$   
 $= 150000m^2$

(ii) Cost of  $1m^2$  land = Rs10000  
Cost of  $150000m^2$  land =  $10000 \times 150000 = Rs1500000000$

Page : 208 , Block Name : Exercise 11.1

Q2 Find the area of a square park whose perimeter is 320 m.

Answer. Perimeter = 320 m  
 $4 \times \text{Length of the side of park} = 320$   
Length of the side park =  $\frac{320}{4} = 80m$   
Area = ( Length of the side of park )<sup>2</sup> =  $(80)^2 = 6400m^2$

Page : 208 , Block Name : Exercise 11.1

Q3 Find the breadth of a rectangular plot of land, if its area is  $440m^2$  and the length is 22 m. Also find its perimeter.

Answer. Area = Length  $\times$  Breadth =  $440m^2$   
 $22 \times \text{Breadth} = 440$   
Breadth =  $\frac{440}{22} = 20m$   
Perimeter =  $2 (\text{Length} + \text{Breadth})$   
 $= 2(22 + 20) = 2(42) = 84m^2$

Page : 208 , Block Name : Exercise 11.1

Q4 The perimeter of a rectangular sheet is 100 cm. If the length is 35 cm, find its breadth. Also find the area.

Answer. Perimeter =  $2(\text{Length} + \text{Breadth}) = 100 \text{ cm}$

Page : 208 , Block Name : Exercise 11.1

Q5 The area of a square park is the same as of a rectangular park. If the side of the square park is 60 m and the length of the rectangular park is 90 m, find the breadth of the rectangular park.

Answer. Area of square park =  $(\text{One of its sides})^2 = (60)^2 = 3600\text{m}^2$

Area of rectangular park =  $\text{Length} \times \text{Breadth} = 3600$

$90 \times \text{Breadth} = 3600$

Breadth = 40m

Page : 208 , Block Name : Exercise 11.1

Q6 A wire is in the shape of a rectangle. Its length is 40 cm and breadth is 22 cm. If the same wire is rebent in the shape of a square, what will be the measure of each side. Also find which shape encloses more area?

Answer. Perimeter of rectangle = Perimeter of square

$2(\text{Length} + \text{Breadth}) = 4 \times \text{side}$

$2(40 + 22) = 4 \times \text{Side}$

$2 \times 62 = 4 \times \text{Side}$

$\text{Side} = \frac{124}{4} = 31\text{cm}$

Area of rectangle =  $40 \times 22 = 880\text{cm}^2$

Area of square =  $(\text{Side})^2 = 31 \times 31 = 961\text{cm}^2$

Therefore, the square-shaped wire encloses more area.

Page : 208 , Block Name : Exercise 11.1

Q7 The perimeter of a rectangle is 130 cm. If the breadth of the rectangle is 30 cm, find its length. Also find the area of the rectangle.

Answer. Perimeter =  $2(\text{Length} + \text{Breadth}) = 130$

$2(\text{Length} + 30) = 130$

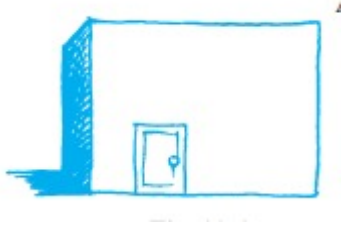
$\text{Length} + 30 = 65$

$\text{Length} = 65 - 30 = 35\text{cm}$

Area =  $\text{Length} \times \text{Breadth} = 35 \times 30 = 1050 \text{ cm}^2$

Page : 208 , Block Name : Exercise 11.1

Q8 A door of length 2 m and breadth 1m is fitted in a wall. The length of the wall is 4.5 m and the breadth is 3.6 m (Figure). Find the cost of white washing the wall, if the rate of white washing the wall is Rs 20 per  $m^2$ .



Answer. Area of wall =  $4.5 \times 3.6 = 16.2m^2$

Area of door =  $2 \times 1 = 2m^2$

Area to be white-washed =  $16.2 - 2 = 14.2m^2$

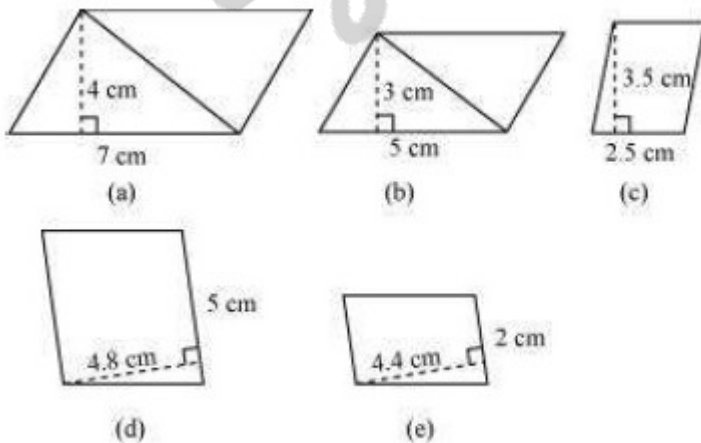
Cost of white-washing  $1m^2$  area = Rs20

$\therefore$  cost of white-washing  $14.2m^2$  area =  $14.2 \times 20 = \text{Rs}284$

Page : 208 , Block Name : Exercise 11.1

### Exercise 11.2

Q1 Find the area of each of the following parallelograms:



Answer. Area of parallelogram = Base x Height

(a) Height = 4 cm

Base = 7 cm

Area of parallelogram =  $7 \times 4 = 28\text{cm}^2$

(b) Height = 3 cm

Base = 5 cm

Area of parallelogram =  $5 \times 3 = 15\text{cm}^2$

(c) Height = 3.5 cm

Base = 2.5 cm

Area of parallelogram =  $2.5 \times 3.5 = 8.75\text{cm}^2$

(d) Height = 4.8 cm

Base = 5 cm

Area of parallelogram =  $5 \times 4.8 = 24\text{cm}^2$

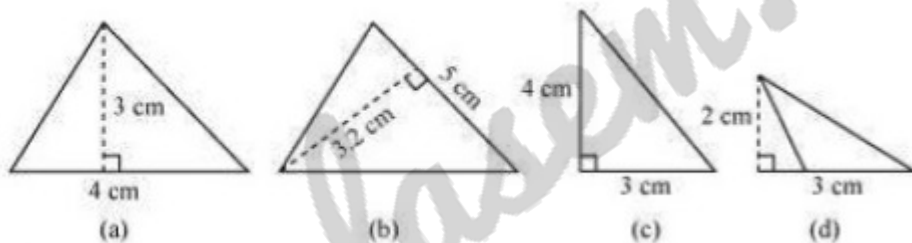
(e) Height = 4.4 cm

Base = 2 cm

Area of parallelogram =  $2 \times 4.4 = 8.8\text{cm}^2$

Page : 216 , Block Name : Exercise 11.2

Q2 Find the area of each of the following triangles:



Answer. Area of triangle =  $\frac{1}{2} \times \text{Base} \times$

(a) Base = 4 cm, height = 3 cm

Area =  $\frac{1}{2} \times 4 \times 3 = 6\text{cm}^2$

(b) Base = 5 cm, height = 3.2 cm

Area =  $\frac{1}{2} \times 5 \times 3.2 = 8\text{cm}^2$

(c) Base = 4 cm, height = 3 cm

Area =  $\frac{1}{2} \times 4 \times 3 = 6\text{cm}^2$

(d) Base = 3 cm, height = 2 cm

Area =  $\frac{1}{2} \times 2 \times 3 = 3\text{cm}^2$

Page : 216 , Block Name : Exercise 11.2

Q3 Find the missing values:

S.No.	Base	Height	Area of the Parallelogram
a.	20 cm		246 cm <sup>2</sup>
b.		15 cm	154.5 cm <sup>2</sup>
c.		8.4 cm	48.72 cm <sup>2</sup>
d.	15.6 cm		16.38 cm <sup>2</sup>

Answer. Area of parallelogram = Base x Height

(a)  $b = 20$  cm

$h = ?$

$$\text{Area} = 246\text{cm}^2$$

$$20 \times h = 246$$

$$h = \frac{246}{20} = 12.3\text{cm}$$

Therefore, the height of such parallelogram is 12.3 cm.

(b)  $b = ?$

$h = 15$ cm

$$\text{Area} = 154.5\text{cm}^2$$

$$b \times 15 = 154.5$$

$$b = 10.3\text{cm}$$

Therefore, the base of such parallelogram is 10.3 cm.

(c)  $b = ?$

$h = 8.4$  cm

$$\text{Area} = 48.72\text{cm}^2$$

$$b \times 8.4 = 48.72$$

$$b = \frac{48.72}{8.4} = 5.8\text{cm}$$

Therefore, the base of such parallelogram is 5.8 cm.

(d)  $b = 15.6$  cm

$h = ?$

$$\text{Area} = 16.38\text{cm}^2$$

$$15.6 \times h = 16.38$$

$$h = \frac{16.38}{15.6} = 1.05\text{cm}$$

Therefore, the height of such parallelogram is 1.05 cm.

Page : 216 , Block Name : Exercise 11.2

Q4 Find the missing values:

Base	Height	Area of Triangle
15 cm	_____	87 cm <sup>2</sup>
_____	31.4 mm	1256 mm <sup>2</sup>
22 cm	_____	170.5 cm <sup>2</sup>

Answer. Area of triangle =  $\frac{1}{2} \times \text{Base} \times$

(a)  $b = 15 \text{ cm}$

$h = ?$

$$\text{Area} = \frac{1}{2} \times b \times h = 87 \text{ cm}^2$$

$$\frac{1}{2} \times 15 \times h = 87 \text{ cm}^2$$

$$h = \frac{87 \times 2}{15} = 11.6 \text{ cm}$$

Therefore, the height of such triangle is 11.6 cm.

(b)  $b = ?$

$h = 31.4 \text{ mm}$

$$\text{Area} = \frac{1}{2} \times b \times h = 1256 \text{ mm}^2$$

$$\frac{1}{2} \times b \times 31.4 = 1256$$

$$b = \frac{1256 \times 2}{31.4} = 80 \text{ mm}$$

Therefore, the base of such triangle is 80 mm.

(c)  $b = 22 \text{ cm}$

$h = ?$

$$\text{Area} = \frac{1}{2} \times b \times h = 170.5 \text{ cm}^2$$

$$\frac{1}{2} \times 22 \times h = 170.5 \text{ cm}^2$$

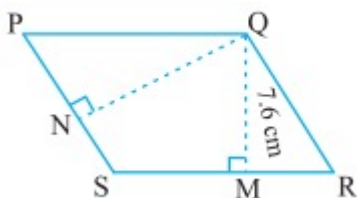
$$h = \frac{170.5 \times 2}{22} = 15.5 \text{ cm}$$

Therefore, the height of such triangle is 15.5 cm.

Page : 217 , Block Name : Exercise 11.2

Q5 PQRS is a parallelogram (Figure). QM is the height from Q to SR and QN is the height from Q to PS. If SR = 12 cm and QM = 7.6 cm. Find: (a) the area of the parallelogram PQRS

(b) QN, if PS = 8 cm



Answer. (a) Area of parallelogram = Base x Height = SR X QM  
 $= 7.6 \times 12 = 91.2\text{cm}^2$

Area of parallelogram = Base x Height = AB X DL

$$1470 = 35 \times DL$$

$$DL = \frac{1470}{35} = 42\text{cm}$$

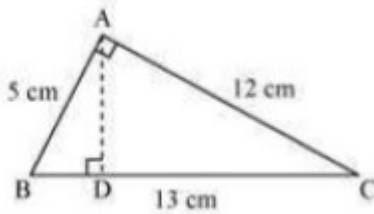
Also,  $1470 = AD \times BM$

$$1470 = 49 \times BM$$

$$BM = \frac{1470}{49} = 30\text{cm}$$

Page : 217 , Block Name : Exercise 11.2

Q7  $\Delta ABC$  is right angled at A (Figure). AD is perpendicular to BC. If AB = 5 cm, BC = 13 cm and AC = 12 cm, Find the area of  $\Delta ABC$ . Also find the length of AD.



Answer. Area =  $\frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2} \times 5 \times 12$

Also, area of triangle =  $\frac{1}{2} \times AD \times BC$

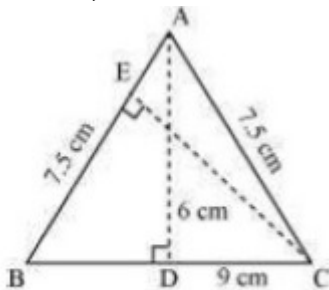
$$30 = \frac{1}{2} \times AD \times 13$$

$$\frac{30 \times 2}{13} = AD$$

$$AD = 4.6\text{cm}$$

Page : 217 , Block Name : Exercise 11.2

Q8  $\Delta ABC$  is isosceles with AB = AC = 7.5 cm and BC = 9 cm (Figure). The height AD from A to BC, is 6 cm. Find the area of  $\Delta ABC$ . What will be the height from C to AB i.e., CE?



Answer. Area of  $\Delta ABC = \frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2} \times BC \times AD$



$$= \frac{1}{2} \times 9 \times 6 = 27\text{cm}^2$$

$$\text{Area of } \triangle ABC = \frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2} \times AB \times CE$$

$$27 = \frac{1}{2} \times 7.5 \times CE$$

$$CE = 7.2\text{cm}$$

Page : 217 , Block Name : Exercise 11.2

### Exercise 11.3

Q1 Find the circumference of the circles with the following radius: ( Take  $\pi = \frac{22}{7}$  )

(a) 14 cm (b) 28 mm (c) 21 cm

Answer. (a)  $r = 14$  cm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 14 = 88 \text{ cm}$$

(b)  $r = 21$  cm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 28 = 176 \text{ mm}$$

(c)  $r = 21$  cm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 21 = 132 \text{ cm}$$

Page : 223 , Block Name : Exercise 11.3

Q2 Find the area of the following circles, given that:

(a) radius = 14 mm ( Take  $\pi = \frac{22}{7}$  )

(b) diameter = 49 m

(c) radius = 5 cm

Answer. (a)  $r = 14$  mm

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 14 \times 14 = 616\text{mm}^2$$

(b)  $d = 49$  m

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

$$\text{Area} = \pi r^2 = \frac{22}{7} \times \frac{49}{2} \times \frac{49}{2} = 1886.5\text{m}^2$$

(c)  $r = 5$  cm

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 5 \times 5 = \frac{550}{7} = 78.57\text{cm}^2$$

Page : 223 , Block Name : Exercise 11.3

Q3 If the circumference of a circular sheet is 154 m, find its radius. Also find the area of the sheet. ( Take  $\pi = \frac{22}{7}$  )

Answer. Circumference =  $2\pi r = 154\text{m}$

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

$$r = 154 \times \frac{7}{44} = \frac{49}{2} = 24.5\text{m}$$

$$\text{Area} = \pi r^2 = \frac{22}{7} \times r^2$$

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

Page : 223 , Block Name : Exercise 11.3

Q4 A gardener wants to fence a circular garden of diameter 21m. Find the length of the rope he needs to purchase, if he makes 2 rounds of fence. Also find the cost of the rope, if it costs Rs 4 per meter. ( Take  $\pi = \frac{22}{7}$  )

Answer.  $d = 21\text{ m}$

$$r = 21/2\text{ m}$$

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times \frac{21}{2} = 66\text{m}$$

$$\text{Length of rope required for fencing} = 2 \times 66\text{m} = 132\text{m}$$

$$\text{Cost of 1 m rope} = \text{Rs } 4$$

$$\text{Cost of 132 m rope} = 4 \times 132 = \text{Rs } 528$$

Page : 223 , Block Name : Exercise 11.3

Q5 From a circular sheet of radius 4 cm, a circle of radius 3 cm is removed. Find the area of the remaining sheet. (Take  $\pi = 3.14$ )



Answer. Outer radius of circular sheet = 4 cm

Inner radius of circular sheet = 3 cm

$$\text{Remaining area} = 3.14 \times 4 \times 4 - 3.14 \times 3 \times 3$$

$$= 50.24 - 28.26$$

$$= 21.98\text{cm}^2$$

Page : 223 , Block Name : Exercise 11.3

Q6 Saima wants to put a lace on the edge of a circular table cover of diameter 1.5 m. Find the length of the lace required and also find its cost if one meter of the lace costs Rs 15. (Take  $\pi = 3.14$ )

Answer. Circumference =  $2\pi r$

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

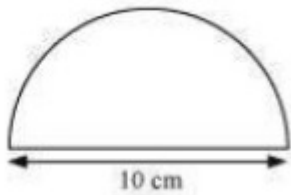
$$= 2 \times 3.14 \times \frac{1.5}{2} = 4.71\text{m}$$

Cost of 1 m lace = Rs 4.71 m

Cost of 4.71 m lace =  $4.71 \times 15 = \text{Rs } 70.65$

Page : 223 , Block Name : Exercise 11.3

Q7 Find the perimeter of the adjoining figure, which is a semicircle including its diameter.



Answer. Radius = 5 cm

Length of curved part =  $\pi r$

$$= \frac{22}{7} \times 5$$

$$= 15.71\text{cm}$$

Total perimeter = Length of curved part + Length of diameter

$$= 15.71 + 10 = 25.71\text{cm}$$

Page : 223 , Block Name : Exercise 11.3

Q8 Find the cost of polishing a circular table-top of diameter 1.6 m, if the rate of polishing is Rs  $15/\text{m}^2$ . (Take  $\pi = 3.14$ )

Answer. Diameter = 1.6 m

Radius =  $1.6/2 = 0.8$  m

Area =  $3.14 \times 0.8 \times 0.8$

$$= 2.0096\text{m}^2$$

Cost of polishing  $1\text{m}^2$  area = Rs15

Cost of polishing  $2.0096\text{m}^2$  area =  $15 \times 2.0096 = 30.14$

Therefore, it will cost Rs 30.14 for polishing such circular table.

Page : 223 , Block Name : Exercise 11.3

Q9 Shazli took a wire of length 44 cm and bent it into the shape of a circle. Find the radius of that circle. Also find its area. If the same wire is bent into the shape of a square, what will be the length of each of its sides? Which figure encloses more area, the circle or the square? ( Take  $\pi = \frac{22}{7}$  )

Answer. Circumference =  $2\pi r = 44\text{cm}$

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

$$r = 7\text{cm}$$

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 7 \times 7 = 154\text{cm}^2$$

If the wire is bent into a square, then the length of each side would be =  $\frac{44}{4} = 11\text{cm}$

$$\text{Area of square} = (11)^2 = 121\text{cm}^2$$

Therefore, circle encloses more area.

Page : 223 , Block Name : Exercise 11.3

Q10 From a circular card sheet of radius 14 cm, two circles of radius 3.5 cm and a rectangle of length 3 cm and breadth 1cm are removed. (as shown in the adjoining figure). Find the area of the remaining sheet. ( Take  $\pi = \frac{22}{7}$  )



Answer. Area of bigger circle

Area of 2 small circles

Area of rectangle = Length x Breadth

$$\text{Remaining area of sheet} = 616 - 77 - 3 = 536\text{cm}^2$$

Page : 223 , Block Name : Exercise 11.3

Q11 A circle of radius 2 cm is cut out from a square piece of an aluminium sheet of side 6 cm. What is the area of the left over aluminium sheet? (Take  $\pi = 3.14$ )

Answer. Area of square-shaped sheet = ( Side )<sup>2</sup> = (6)<sup>2</sup> = 36cm<sup>2</sup>

$$\text{Area of circle} = 3.14 \times 2 \times 2 = 12.56\text{cm}^2$$

$$\text{Remaining area of sheet} = 36 - 12.56 = 23.44\text{cm}^2$$

Page : 224 , Block Name : Exercise 11.3

Q12 The circumference of a circle is 31.4 cm. Find the radius and the area of the circle?  
(Take  $\pi = 3.14$ )

Answer. Circumference =  $2\pi r = 31.4$  cm

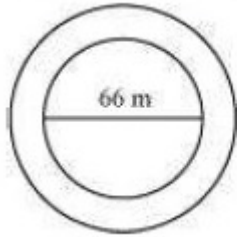
$$2 \times 3.14 \times r = 31.4$$

$$r = 5\text{cm}$$

$$\text{Area} = 3.14 \times 5 \times 5 = 78.50\text{cm}^2$$

Page : 224 , Block Name : Exercise 11.3

Q13 A circular flower bed is surrounded by a path 4 m wide. The diameter of the flower bed is 66 m. What is the area of this path? ( $\pi = 3.14$ )



Answer. Radius of flower bed =  $\frac{66}{2} = 33\text{m}$

Radius of flower bed and path together =  $33 + 4 = 37\text{m}$

Area of flower bed and path together =  $3.14 \times 37 \times 37 = 4298.66\text{m}^2$

Area of flower bed =  $3.14 \times 33 \times 33 = 3419.46\text{m}^2$

Area of path = Area of flower bed and path together - Area of flower bed  
=  $4298.66 - 3419.46 = 879.20\text{m}^2$

Page : 224 , Block Name : Exercise 11.3

Q14 A circular flower garden has an area of  $314\text{m}^2$ . A sprinkler at the centre of the garden can cover an area that has a radius of 12 m. Will the sprinkler water the entire garden? (Take  $\pi = 3.14$ )

Answer. Area =  $\pi r^2 = 314\text{m}^2$

$$3.14 \times r^2 = 314$$

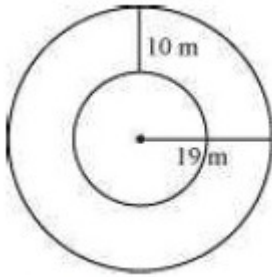
$$r^2 = 100$$

$$r = 10\text{m}$$

Yes, the sprinkler will water the whole garden.

Page : 224 , Block Name : Exercise 11.3

Q15 Find the circumference of the inner and the outer circles, shown in the adjoining figure? (Take  $\pi = 3.14$ )



Answer. Radius of outer circle = 19 m  
 Circumference =  $2\pi r = 2 \times 3.14 \times 19 = 119.32\text{m}$   
 Radius of inner circle =  $19 - 10 = 9\text{m}$   
 Circumference =  $2\pi r = 2 \times 3.14 \times 9 = 56.52\text{m}$

Page : 224 , Block Name : Exercise 11.3

Q16 How many times a wheel of radius 28 cm must rotate to go 352 m? ( Take  $\pi = \frac{22}{7}$  ).

Answer.  $r = 28\text{cm}$   
 Circumference =  $2\pi r = 2 \times \frac{22}{7} \times 28 = 176 \text{ cm}$   
 Number of rotations =  $\frac{\text{Total distance to be covered}}{\text{Circumference of wheel}} = \frac{352\text{m}}{176\text{cm}} = \frac{35200}{176} = 200$   
 Therefore, it will rotate 200 times.

Page : 224 , Block Name : Exercise 11.3

Q17 The minute hand of a circular clock is 15 cm long. How far does the tip of the minute hand move in 1 hour. (Take  $\pi = 3.14$ )

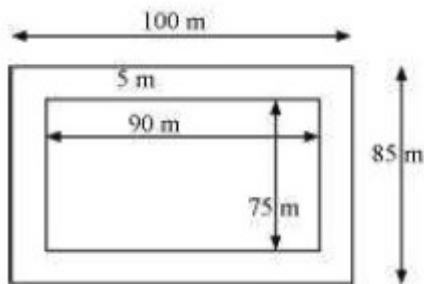
Answer. Distance travelled by the tip of minute hand Circumference of the clock  
 $= 2\pi r = 2 \times 3.14 \times 15$   
 $= 94.2\text{cm}$

Page : 224 , Block Name : Exercise 11.3

#### Exercise 11.4

Q1 A garden is 90 m long and 75 m broad. A path 5 m wide is to be built outside and around it. Find the area of the path. Also find the area of the garden in hectare.

Answer.



Length (l) of garden = 90 m

Breadth (b) of garden = 75 m

Area of garden =  $l \times b = 90 \times 75 = 6750 \text{ m}^2$

From the figure, it can be observed that the new length and breadth of the garden, when path is also included, are 100 m and 85 m respectively.

Area of path = Area of the garden including the path - Area of garden  
 $= 8500 - 6750 = 1750 \text{ m}^2$

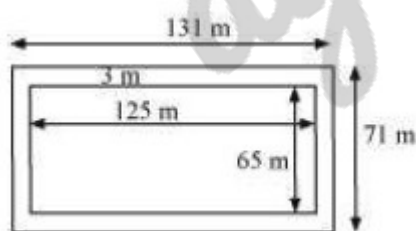
1 hectare =  $10000 \text{ m}^2$

Therefore, area of garden in hectare =  $\frac{6750}{10000} = 0.675$

Page : 226 , Block Name : Exercise 11.4

Q2 A 3 m wide path runs outside and around a rectangular park of length 125 m and breadth 65 m. Find the area of the path.

Answer.



Length (l) of park = 125m

Breadth (b) of park = 65m

Area of park =  $l \times b = 125 \times 65 = 8125 \text{ m}^2$

From the figure, it can be observed that the new length and breadth of the park, when path is also included, are 131 m and 71 m respectively.

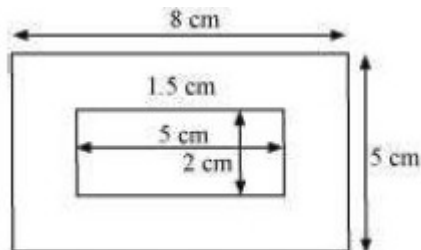
Area of the park including the path =  $131 \times 71 = 9301 \text{ m}^2$

Area of path = Area of the park including the path - Area of park  
 $= 9301 - 8125 = 1176 \text{ m}^2$

Page : 226 , Block Name : Exercise 11.4

Q3 A picture is painted on a cardboard 8 cm long and 5 cm wide such that there is a margin of 1.5 cm along each of its sides. Find the total area of the margin.

Answer.



Length ( $l$ ) of cardboard = 8cm

Breadth ( $b$ ) of cardboard = 5 cm

Area of cardboard including margin =  $l \times b = 8 \times 5 = 40\text{cm}^2$

From the figure, it can be observed that the new length and breadth of the cardboard, when margin is not included, are 5 cm and 2 cm respectively.

Area of the cardboard not including the margin =  $5 \times 2 = 10\text{cm}^2$

Area of the margin = Area of cardboard including the margin - Area of cardboard not including the margin  
 $= 40 - 10 = 30\text{cm}^2$

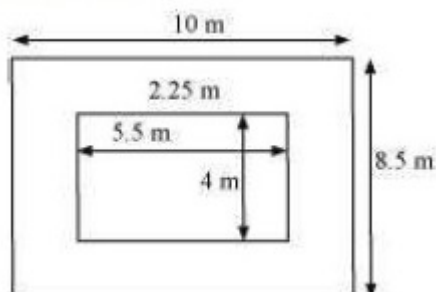
Page : 226 , Block Name : Exercise 11.4

Q4 A verandah of width 2.25 m is constructed all along outside a room which is 5.5 m long and 4 m wide. Find:

(i) the area of the verandah.

(ii) the cost of cementing the floor of the verandah at the rate of Rs 200 per  $\text{m}^2$

Answer.



(i) Length ( $l$ ) of room = 5.5m

Breadth ( $b$ ) of room = 4m

Area of room =  $l \times b = 5.5 \times 4 = 22\text{m}^2$



From the figure, it can be observed that the new length and breadth of the room, when verandah is also included, are 10 m and 8.5 m respectively.

$$\text{Area of the room including the verandah} = 10 \times 8.5 = 85\text{m}^2$$

$$\begin{aligned} \text{Area of verandah} &= \text{Area of the room including the verandah} - \text{Area of room} \\ &= 85 - 22 = 63\text{m}^2 \end{aligned}$$

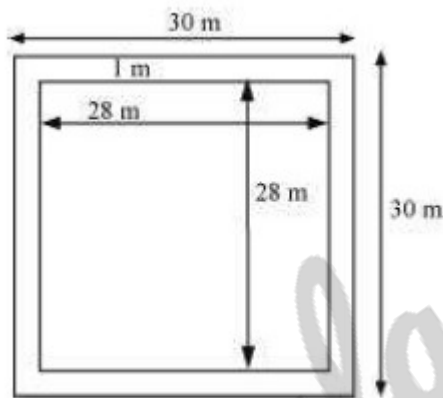
(ii) Cost of cementing  $1\text{m}^2$  area of the floor of the verandah = Rs 200

$$\begin{aligned} \text{Cost of cementing } 63\text{m}^2 \text{ area of the floor of the verandah} &= 200 \times 63 \\ &= \text{Rs } 12600 \end{aligned}$$

Page : 226 , Block Name : Exercise 11.4

Q5 A path 1 m wide is built along the border and inside a square garden of side 30 m. Find: (i) the area of the path (ii) the cost of planting grass in the remaining portion of the garden at the rate of Rs 40 per  $\text{m}^2$  .

Answer.



(i) Side (a) of square garden 30 m

$$\text{Area of square garden including path} = a^2 = (30)^2 = 900\text{m}^2$$

From the figure, it can be observed that the side of the square garden, when path is not included, is 28 m.

$$\text{Area of the square garden not including the path} = (28)^2 = 784\text{m}^2$$

$$\begin{aligned} \text{Area of the path} &= \text{Area of the square garden including the path} - \text{Area of square garden} \\ &\text{not including the path} \\ &= 900 - 784 = 116\text{m}^2 \end{aligned}$$

(ii) Cost of planting grass in  $1\text{m}^2$  area of the garden = Rs 40

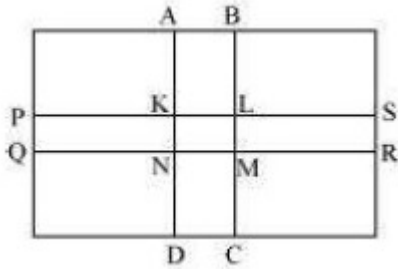
$$\text{Cost of planting grass in } 784\text{m}^2 \text{ area of the garden} = 784 \times 40 = \text{Rs } 31360$$

Page : 226 , Block Name : Exercise 11.4

Q6 Two cross roads, each of width 10 m, cut at right angles through the centre of a rectangular park of length 700 m and breadth 300 m and parallel to its sides. Find the

area of the roads. Also find the area of the park excluding cross roads. Give the answer in hectares.

Answer.



Length (l) of park = 700 m

Breadth (b) of park = 300 m

Area of park =  $700 \times 300 = 210000 \text{ m}^2$

Length of road PQRS = 700 m

Length of road ABCD = 300 m

Width of each road = 10 m

Area of the roads =  $10 \text{ m}$

Area of the roads = ar ( PQRS ) + ar ( ABCD ) - ar ( KLMN )  
 $= (700 \times 10) + (300 \times 10) - (10 \times 10)$

Length (l) of field = 90 m

Breadth (b) of field = 60 m

Area of field =  $90 \times 60 = 5400 \text{ m}^2$

Length of road PQRS = 90 m

Length of road ABCD = 60 m

Width of each road = 3m

Area of the roads = ar ( PQRS ) + ar ( ABCD ) - ar ( KLMN )  
 $= (90 \times 3) + (60 \times 3) - (3 \times 3)$   
 $= 270 + 180 - 9 = 441 \text{ m}^2$

Cost for constructing  $1 \text{ m}^2$  road = Rs 110

Cost for constructing  $441 \text{ m}^2$  road =  $110 \times 441 = \text{Rs}48510$

Page : 227 , Block Name : Exercise 11.4

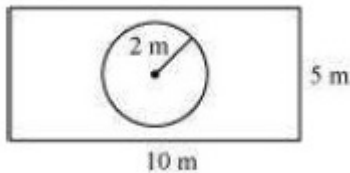
Q8 Pragma wrapped a cord around a circular pipe of radius 4 cm (adjoining figure) and cut off the length required of the cord. Then she wrapped it around a square box of side 4 cm (also shown). Did she have any cord left? ( $\pi = 3.14$ ).



Answer. Perimeter of the square =  $4 \times \text{Side of the square} = 4 \times 4 = 16 \text{ cm}$   
 Perimeter of circular pipe =  $2\pi r = 2 \times 3.14 \times 4 = 25.12 \text{ cm}$   
 Length of chord left with Pragya =  $25.12 - 16 = 9.12 \text{ cm}$

Page : 227 , Block Name : Exercise 11.4

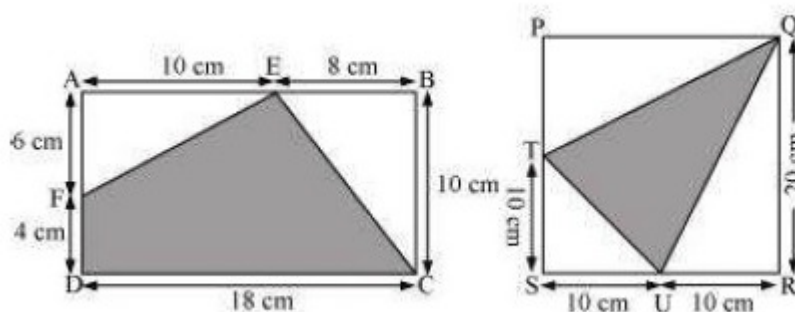
Q9 The adjoining figure represents a rectangular lawn with a circular flower bed in the middle. Find: (i) the area of the whole land (ii) the area of the flower bed (iii) the area of the lawn excluding the area of the flower bed (iv) the circumference of the flower bed.



Answer. (i) Area of whole land = Length  $\times$  Breadth =  $10 \times 5 = 50 \text{ m}^2$   
 (ii) Area of flower bed =  $\pi r^2 = 3.14 \times 2 \times 2 = 12.56 \text{ m}^2$   
 (iii) Area of lawn excluding the flower bed = Area of whole land - Area of flower bed  
 $= 50 - 12.56 = 37.44 \text{ m}^2$   
 (iv) Circumference of flower bed =  $2\pi r = 2 \times 3.14 \times 2 = 12.56 \text{ m}$

Page : 227 , Block Name : Exercise 11.4

Q10 In the following figures, find the area of the shaded portions:



Answer. (i) Area of EFDC = ar( ABCD) - ar( BCE) - ar ( AFE)  
 $= (18 \times 10) - \frac{1}{2}(10 \times 8) - \frac{1}{2}(6 \times 10)$

$$= 180 - 40 - 30 = 110\text{cm}^2$$

$$\begin{aligned} \text{(ii) ar (QTU)} &= \text{ar (PQRS)} - \text{ar (TSU)} - \text{ar (RUQ)} - \text{ar (PQT)} \\ &= (20 \times 20) - \frac{1}{2}(10 \times 10) - \frac{1}{2}(20 \times 10) - \frac{1}{2}(20 \times 10) \\ &= 400 - 50 - 100 - 100 = 150\text{cm}^2 \end{aligned}$$

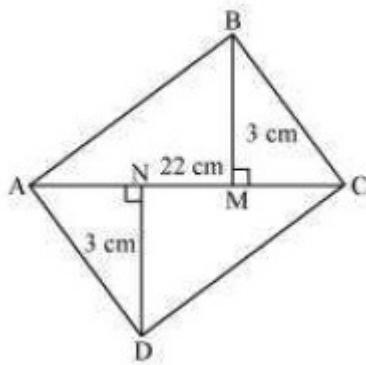
Page : 227 , Block Name : Exercise 11.4

Q11 Find the area of the quadrilateral ABCD.

Here, AC = 22 cm, BM = 3 cm,

DN = 3 cm, and

BM  $\perp$  AC, DN  $\perp$  AC



$$\begin{aligned} \text{Answer. ar ( ABCD )} &= \text{ar ( ABC )} + \text{ar ( ADC )} \\ &= \frac{1}{2}(3 \times 22) + \frac{1}{2}(3 \times 22) \\ &= 33 + 33 = 66\text{cm}^2 \end{aligned}$$

Page : 227 , Block Name : Exercise 11.4