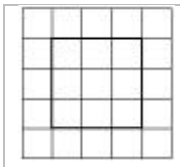
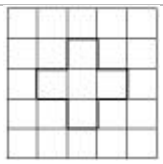
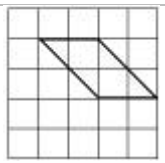
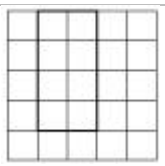
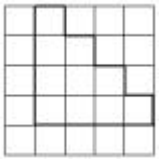
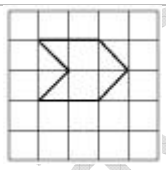
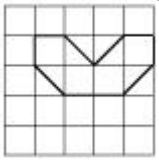
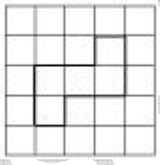
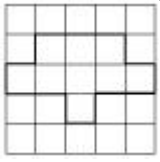
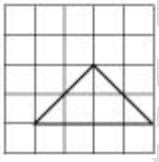
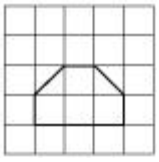
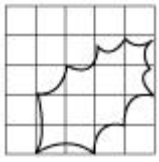
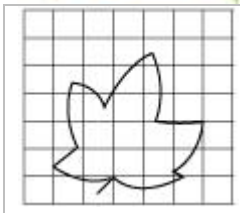
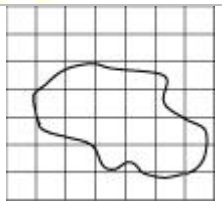
NCERT solution for Mensuration

Exercise 10.2

Question 1

Find the areas of the following figures by counting square:

		
(a)	(b)	(c)
		
(d)	(e)	(f)
		
(g)	(h)	(i)
		
(j)	(k)	(l)

		
(m)	(n)	

Answer

Important points to consider before solving these questions

1) The area of one full square is taken as 1 sq. unit. If it is a centimetre square sheet, then area of one full square will be 1 sq. cm.
2) Ignore portions of the area that are less than half a square.
3) If more than half of a square is in a region, just count it as one square.
4) If exactly half the square is counted, take its area as ½ sq. unit.

Question	Full square	½ square	region less than half a square. They will be not counted in area	Region greater than half square. They will be counted as full squares	Total area by counting squares
a)	9	-	-	-	9
b)	5	-	-	-	5
c)	2	4	-	-	2+1/2+1/2+1/2+1/2= 4
d)	8	-	-	-	8
e)	10	-	-	-	10
f)	2	4	-	-	2+ 4×1/2= 4
g)	4	4	-	-	4+ 4×1/2= 6
h)	5	-	-	-	5
i)	9	-	-	-	9
j)	2	4	-	-	2+ 4×1/2= 4
k)	4	2	-	-	4+ 2×1/2= 5

l)	2	2	4	3	2+2×1/2+ 3=6
m)	5	-	5	9	5+9=14
n)	8	-	6	10	8+10=18

Exercise 10.3

Question 1

Find the areas of the rectangles whose sides are:

(a) 3 cm and 4 cm

(b) 12 m and 21 m

(c) 2 km and 3 km

(d) 2 m and 70 cm

Answer

Area of the rectangles is given by = L× B

a)	3cm, 4cm	12 cm^2
b)	12cm,21cm	252 cm^2
c)	2km,3km	6 km^2
d)	2m,70cm (.7 m)	1.4 m^2

Question 2

Find the areas of the squares whose sides are:

(a) 10 cm

(b) 14 cm

(c) 5 m

Answer

Area of the square is given by = $(side)^2$

a)	10 cm	$100cm^2$
b)	14 cm	196 cm^2
c)	5 cm	25 m^2

Question 3

The length and breadth of three rectangles are as given below:

(a) 9 m and 6 m

(b) 17 m and 3 m

(c) 4 m and 14 m

Which one has the largest area and which one has the smallest?

Answer

Area of the rectangles is given by = L× B

a)	9m, 6m	54 m^2
b)	17m,3m	$51m^2$
c)	4m,14m	56 m^2

c) has the largest area and b) has the smallest area.

Question 4

The area of a rectangular garden 50 m long is 300 sq. m. Find the width of the garden.

Answer

Length of the rectangular garden is 50 m
Area = 300 sq. m
Area of a rectangle = length × breadth
I.e. 300 = 50 × breadth
Breadth = 300 / 50 = 6 m
So, breadth (width) of the garden is 6 m.

Question 5

What is the cost of tiling a rectangular plot of land 500 m long and 200 m wide at the rate of Rs 8 per hundred sq. m?

Answer

To tile a rectangular plot, we need to find the area of the plot.
Given length of the plot = 500 m
Width of the plot = 200 m
So, area of the plot = 500 × 200 = 1,00,000 sq. m

The cost of tiling 100 sq. m = Rs 8.
So, the cost of tiling 1,00,000 sq. m is (8 × 1,00,000)/100 = Rs. 8,000

Question 6

A table-top measures 2 m by 1 m 50 cm. What is its area in square meters?

Answer

The important thing in these question is the Unit conversion. We need to either convert m into cm or cm into m. It is good to convert into lowest unit to make it easier

Length of the table-top = 2 m
Width of the table-top = 1 m 50 cm = 1.50 m
So, area of the table-top = length × breadth = 2 × 1.50 = 3 sq. m

Question 7

A room is 4 m long and 3 m 50 cm wide. How many square meters of carpet is needed to cover the floor of the room?

Answer

Length of the room = 4 m
Width of the room is 3 m 50 cm = 3.50 m
To carpet the room, we need to find the area of the floor.
So, Area of the room = length × breadth = 4 × 3.50 = 14 sq. m

Question 8

A floor is 5 m long and 4 m wide. A square carpet of sides 3 m is laid on the floor. Find the area of the floor that is not carpeted.

Answer

Given Length of the floor = 5 m
Width of the floor = 4 m
Total area of the floor = 5 × 4 = 20 sq. m

Area of the square carpet = 3 × 3 = 9 sq. m
So, 9 sq. m of the floor is covered with carpet.

So, area of the floor that is not carpeted = 20 – 9 = 11 sq. m

Question 9

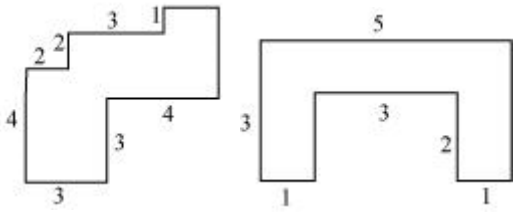
Five square flower beds each of sides 1 m are dug on a piece of land 5 m long and 4 m wide. What is the area of the remaining part of the land?

Answer
Area of the piece of land = 5 × 4 = 20 m^2
Area of each flower bed = 1 × 1 = 1 m^2
Five square beds are dug on the land.
So, area of five such flower beds = 5 m^2
Area of the remaining part = Area of the piece of land – area of the 5 flower beds.

$$= 20 - 5 = 15 \text{ m}^2$$

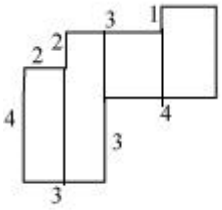
Question 10

By splitting the following figures into rectangles, find their areas (The measures are given in centimeters).



Answer

a) The given figure can be divided into four rectangles



Area of first rectangle $=4\times2=8$ cm^2

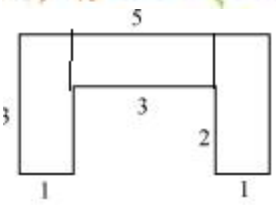
Area of second rectangles$= 6\times1=6$ cm^2

Area of Third rectangles$= 3\times2=6$ cm^2

Area of four rectangles$= 4\times2=8$ cm^2

Total area $=28$ cm^2

b) The given figure can be divided into three rectangles



Area of first rectangle $=3\times1=3\ cm^2$

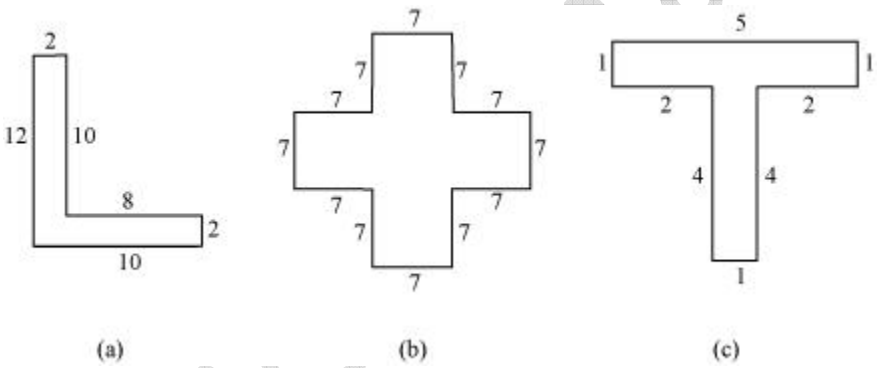
Area of second rectangles$= 3\times1=3\ cm^2$

Area of Third rectangles$= 3\times1=3\ cm^2$

Total area $=9\ cm^2$

Question 12

Split the following shapes into rectangles and find their areas. (The measures are given in centimeters)



(a) (b) (c)

Answer

This question can be attempted in the same way as previous question

a) 40 cm^2

b) 49 cm^2

c) 9 cm^2

Question 13

How many tiles whose length and breadth are 12 cm and 5 cm respectively will be needed to fit in a rectangular region whose length and breadth are respectively:

(a) 100 cm and 144 cm

(b) 70 cm and 36 cm

Answer

Length of the tile = 12 cm; Breadth of the tile = 5 cm
Area of one tile = 12 × 5 = 60 sq. cm

a) Length of the rectangular region = 100 cm

Breadth of the rectangular region = 144 cm

Area of the rectangular region = 100 × 144 = 14400 sq. cm

Therefore, number of tiles needed = 14400/60 = 240 tiles

b) Length of the rectangular region = 70 cm

Breadth of the rectangular region = 36 cm

Area of the rectangular region = 70 × 36 = 2520 sq. cm

So number of tiles needed = 2520/60 = 42 tiles