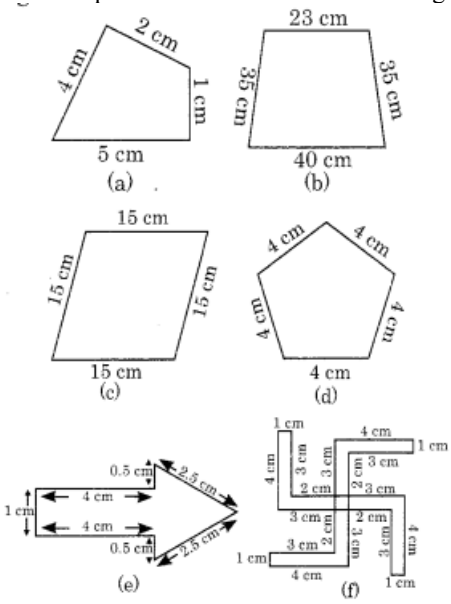
NCERT Solutions For Class 6 Maths Chapter 10 Mensuration Ex 10.1

Exercise 10.1

Ex 10.1 Class 6 Maths Question 1.
Find the perimeter of each of the following figures:



Solution:
(a) Required perimeter
= 4 cm + 2 cm + 1 cm + 5 cm = 12 cm
(b) Required perimeter
= 40 cm + 35 cm + 23 cm + 35 cm
= 133 cm or 1.33 m
(c) Required perimeter
= 15 cm + 15 cm + 15 cm + 15 cm = 15 cm x 4 = 60 cm
(d) Required perimeter
= 4 cm + 4 cm + 4 cm + 4 cm + 4 cm – 4 cm x 5 = 20 cm
(e) Required perimeter
= 4 cm + 0.5 cm + 2.5 cm + 2.5 cm + 0.5 cm + 4 cm + 1 cm
= 15 cm
(f) Required perimeter = 4 cm + 1 cm + 3 cm + 2 cm + 3 cm + 4 cm + 1 cm + 3 cm + 2 cm + 3 cm + 4 cm + 1 cm + 3 cm + 2 cm + 3 cm + 4 cm + 1 cm + 3 cm + 2 cm + 3 cm
= 52 cm

Ex 10.1 Class 6 Maths Question 2.
The lid of a rectangular box of sides 40 cm by 10 cm is sealed all round with tape. What is the length of the tape required?
Solution:
Total length of the tape required = perimeter of the rectangular lid
= 2 [length + breadth] = 2 x [40 + 10]
= 2 x 50 = 100 cm

Ex 10.1 Class 6 Maths Question 3.
A table-top measures 2 m 25 cm by 1 m 50 cm. What is the perimeter of the table-top?
Solution:
Length of table-top = 2 m 25 cm
Breadth of table-top = 1 m 50 cm
∴ Perimeter of the table top = 2 [length + breadth]
= 2 [2 m 25 cm + 1 m 50 cm]

2 m	25 cm
+ 1 m	50 cm
3 m	75 cm
	× 2
7 m	50 cm

= 2 x 3 m 75 cm
= 7 m 50 cm
= 7.5 m

Ex 10.1 Class 6 Maths Question 4.
What is the length of the wooden strip required to frame a photograph of length and breadth 32 cm and 21 cm respectively?
Solution:

Length of the strip = 32 cm
Breadth of the strip = 21 cm
∴ Perimeter = 2 [length + breadth]
= 2 [32 cm + 21 cm]
= 2 x 53 cm = 106 cm
Hence, the required length of the strip = 106 cm or 1 m 6 cm.

Ex 10.1 Class 6 Maths Question 5.
A rectangular piece of land measures 0.7 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?
Solution:
Length of the rectangular piece of land = 0.7 km = 0.7 x 1000 m = 700 m
Breadth of the rectangular piece of land = 0.5 km = 0.5 x 1000 m = 500 m
∴ Perimeter of the rectangular land
= 2 [length + breadth]
= 2 [700 m + 500 m]
= 2400 m.
Length of wire needed in 4 rounds of the land = 4 x 2400 = 9600 m = 9.6 km.

Ex 10.1 Class 6 Maths Question 6.
Find the perimeter of each of the following shapes:
(a) A triangle of sides 3 cm, 4 cm and 5 cm.
(b) An equilateral triangle of side 9 cm.
(c) An isosceles triangle with equal sides 8 cm each and third side 6 cm.
Solution:
(a) We know that the perimeter of the given triangle = The sum of all sides of the triangle
∴ Perimeter of the triangle = 3 cm + 4 cm + 5 cm = 12 cm
(b) We know that the perimeter of the given triangle
= Sum of all the sides of the triangle
= (9 + 9 + 9) = 27 cm
(c) Perimeter of the given isosceles triangle
= Sum of all the sides of the triangle
= (8 + 8 + 6) cm = 22 cm

Ex 10.1 Class 6 Maths Question 7.
Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.
Solution:
Perimeter of a triangle = Sum of all the sides of the triangle
= 10 cm + 14 cm + 15 cm
= 39 cm

Ex 10.1 Class 6 Maths Question 8.
Find the perimeter of a regular hexagon with each side measuring 8 m.
Solution:
Perimeter of a regular hexagon = 6 x side = 6 x 8 m = 48 m.

Ex 10.1 Class 6 Maths Question 9.
Find the side of the square whose perimeter is 20 m.
Solution:
Perimeter of a square = 4 x side
20 = 4 x side
∴ side = 20 m ÷ 4 = 5 m

Ex 10.1 Class 6 Maths Question 10.
The perimeter of a regular pentagon is 100 cm. How long is its each side?
Solution:
We have
Perimeter of the regular pentagon = 100 cm
Number of sides in regular pentagon = 5
∴ Length of each side = Perimeter ÷ Number of sides
= 100 cm ÷ 5 = 20 cm.

Ex 10.1 Class 6 Maths Question 11.
A piece of string is 30 cm long. What will be the length of each side if the string is used to form:
(a) a square?
(b) an equilateral triangle?
(c) a regular hexagon?
Solution:
(a) Length of string = 30 cm

Number of equal sides in a square = 4
∴ Length of each side of the square = 30 cm ÷ 4 = 7.50 cm.

(b) Length of string = 30 cm
Number of equal sides in equilateral triangle = 3
∴ Length of each side of the equilateral triangle = 30 cm ÷ 3 = 10 cm

(c) Length of string = 30 cm
Number of equal sides in regular hexagon = 6
∴ Length of each side of the regular hexagon = 30 cm ÷ 6 = 5 cm

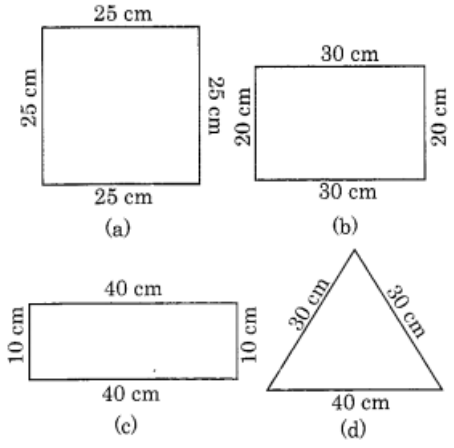
Ex 10.1 Class 6 Maths Question 12.
Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is its third side?
Solution:
Perimeter of the triangle = 36 cm.
Length of two of its sides are 12 cm and 14 cm.
Length of the third side of the triangle = 36 – (12 + 14) cm
= (36 – 26) cm = 10 cm

Ex 10.1 Class 6 Maths Question 13.
Find the cost of fencing a square park of side 250 m at the rate of? 20 per metre.
Solution:
Length of the side of a square = 250 m
∴ Perimeter of the square = 250 m x 4 = 1000 m
Rate of fencing = ₹20 per m.
∴ Cost of fencing = ₹20 x 1000 = ₹20,000

Ex 10.1 Class 6 Maths Question 14.
Find the cost of fencing a rectangular park of length 175 m and breadth 125 m at the rate of ₹12 per metre.
Solution:
Length of the rectangular park = 175 m
Breadth of the rectangular park = 125 m
∴ Perimeter of the park = 2 [length + breadth]
= 2[175 m + 125 m]
= 2 x 300 m = 600 m
Rate of fencing = ₹ 12 per metre Cost of fencing = ₹12 x 600 = ₹7200

Ex 10.1 Class 6 Maths Question 15.
Sweety runs around a square park of side 75 m. Bulbul runs around a rectangular park with length 60 m and breadth 45 m. Who covers less distance?
Solution:
Side of the square park = 75 m
∴ its perimeter = 4 x 75 m = 300 m
Perimeter of the rectangular park = 2 [length + breadth]
= 2 [60 m + 45 m]
= 2 x 105 m = 210 m.
Since 210 m < 300 m.
So, Bulbul covers less distance.

Ex 10.1 Class 6 Maths Question 16.
What is the perimeter of each of the following figures? What do you infer from the answers?



Solution:
(a) Perimeter of the square = 25 cm + 25 cm + 25 cm + 25 cm = 4 x 25 cm = 100 cm
(b) Perimeter of the rectangle = 30 cm + 20 cm + 30 cm + 20 cm – 2 [30 cm + 20 cm] = 2 x 50 cm = 100 cm
(c) Perimeter of the rectangle = 40 cm + 10 cm + 40 cm + 10 cm = 2 [40 cm + 10 cm] = 2 x 50 cm = 100 cm

(d) Perimeter of the triangle = Sum of all sides = 30 cm + 30 cm + 40 cm = 100 cm From the above answers, we conclude that different figures may have equal perimeters.

Ex 10.1 Class 6 Maths Question 17.

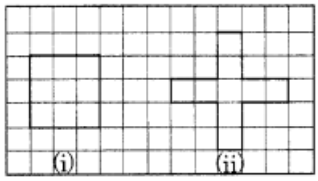
Avneet buys 9 square paving slabs, each with a side of $\frac{1}{7}$ m. He lays them in the form of a square.

(a) What is the perimeter of his arrangement [Fig. (i)]?

(b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement [Fig. (ii)]?

(c) Which has greater perimeter?

(d) Avneet wonders, if there is a way of getting an even greater perimeter. Can you find a way of doing this? (The paving slabs must meet along complete edges, i.e., they can not be broken).



Solution:

(a) The arrangement is in the form of a square of side

$$\left(\frac{1}{2}\text{ m} + \frac{1}{2}\text{ m} + \frac{1}{2}\text{ m}\right) = 1\frac{1}{2}\text{ m}.$$

$\therefore$ Perimeter of the square arrangement

$$= 4 \times \text{side}$$

$$= 4 \times 1\frac{1}{2}\text{ m}$$

$$= 4 \times \frac{3}{2}\text{ m} = 6\text{ m}.$$

(b) Perimeter of cross-arrangement

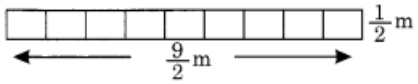
$$= \frac{1}{2}\text{ m} + 1\text{ m} + 1\text{ m} + \frac{1}{2}\text{ m} + 1\text{ m} + 1\text{ m} + \frac{1}{2}\text{ m}$$
$$+ 1\text{ m} + 1\text{ m} + \frac{1}{2}\text{ m} + 1\text{ m} + 1\text{ m} = 10\text{ m}$$

(c) Since 10 m > 6 m

$\therefore$ Cross-arrangement has greater perimeter.

(d) Total number of tiles = 9

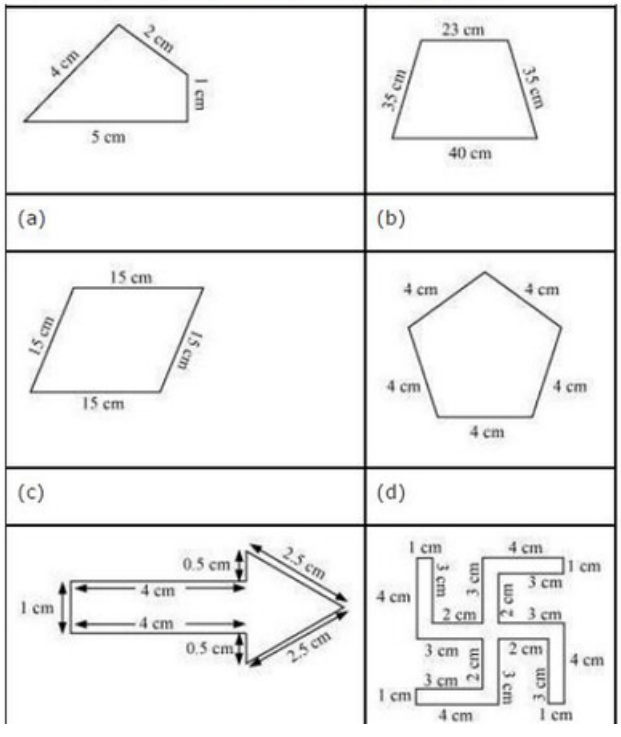
$\therefore$ We have the following arrangement



The above arrangement will also have the greater perimeter.

Question 1:

Find the perimeter of each of the following figures:



Answer:

Perimeter of a polygon is equal to the sum of the lengths of all sides of that polygon.

(a) Perimeter = (4 + 2 +1 + 5) cm = 12 cm

(b) Perimeter = (23 + 35 + 40 + 35) cm = 133 cm

(c) Perimeter = (15 + 15 + 15 + 15) cm = 60 cm

(d) Perimeter = (4 + 4 + 4 + 4 + 4) cm = 20 cm

(e) Perimeter = (1 + 4 + 0.5 + 2.5 + 2.5 + 0.5 + 4) cm = 15 cm

(f) Perimeter = (1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4) = 52 cm

Question 2:

The lid of a rectangular box of sides 40 cm by 10 cm is sealed all round with tape. What is the length of the tape required?

Answer:

Length (l) of rectangular box = 40 cm

Breadth (b) of rectangular box = 10 cm

Length of tape required = Perimeter of rectangular box

= 2 (l + b) = 2(40 + 10) = 100 cm

Question 3:

A table-top measures 2 m 25 cm by 1 m 50 cm. What is the perimeter of the table-top?

Answer:

Length (l) of table-top = 2 m 25 cm = 2 + 0.25 = 2.25 m

Breadth (b) of table-top = 1 m 50 cm = 1 + 0.50 = 1 .50 m

Perimeter of table-top = 2 (l + b)

= 2 × (2.25 + 1.50)

= 2 × 3.75 = 7.5 m

Question 4:

What is the length of the wooden strip required to frame a photograph of length and breadth 32 cm and 21 cm respectively?

Answer:

Length (l) of photograph = 32 cm

Breadth (b) of photograph = 21 cm

Length of wooden strip required = Perimeter of Photograph

= 2 × (l + b)

= 2 × (32 + 21) = 2 × 53 = 106 cm

Question 5:

A rectangular piece of land measures 0.7 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?

Answer:

Length (l) of land = 0.7 km

Breadth (b) of land = 0.5 km

Perimeter = 2 × (l + b)

= 2 × (0.7 + 0.5) = 2 × 1.2 = 2.4 km

Length of wire required = 4 × 2.4 = 9.6 km

Question 6:

Find the perimeter of each of the following shapes:

(a) A triangle of sides 3 cm, 4 cm and 5 cm.

(b) An equilateral triangle of side 9 cm.

(c) An isosceles triangle with equal sides 8 cm each and third side 6 cm.

Answer:

(a) Perimeter = (3 + 4 + 5) cm = 12 cm

(b) Perimeter of an equilateral triangle = 3 × Side of triangle

= (3 × 9) cm = 27 cm

(c) Perimeter = (2 × 8) + 6 = 22 cm

Question 7:

Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.

Answer:

Perimeter of triangle = Sum of the lengths of all sides of the triangle

Perimeter = 10 + 14 + 15 = 39 cm

Question 8:

Find the perimeter of a regular hexagon with each side measuring 8 m.

Answer:

Perimeter of regular hexagon = 6 × Side of regular hexagon

Perimeter of regular hexagon = 6 × 8 = 48 m

Question 9:

Find the side of the square whose perimeter is 20 m.

Answer:

Perimeter of square = 4 × Side

20 = 4 × Side

Side = $\frac{20}{4} = 5$ m

Question 10:

The perimeter of a regular pentagon is 100 cm. How long is its each side?

Answer:

Perimeter of regular pentagon = 5 × Length of side

100 = 5 × Side

Side = $\frac{100}{5}$ = 20 cm

Question 11:

A piece of string is 30 cm long. What will be the length of each side if the string is used to form:

(a) a square?

(b) an equilateral triangle?

(c) a regular hexagon?

Question 11:

A piece of string is 30 cm long. What will be the length of each side if the string is used to form:

(a) a square?

(b) an equilateral triangle?

(c) a regular hexagon?

Answer:

(a) Perimeter = 4 × Side

30 = 4 × Side

Side = $\frac{30}{4} = 7.5$ cm

(b) Perimeter = 3 × Side

30 = 3 × Side

Side = $\frac{30}{3} = 10$ cm

(c) Perimeter = 6 × Side

30 = 6 × Side

Side = $\frac{30}{6} = 5$ cm

Question 12:

Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is its third side?

Answer:

Perimeter of triangle = Sum of all sides of the triangle

36 = 12 + 14 + Side

36 = 26 + Side

Side = 36 − 26 = 10 cm

Hence, the third side of the triangle is 10 cm.

Question 13:

Find the cost of fencing a square park of side 250 m at the rate of Rs 20 per metre.

Answer:

Length of fence required = Perimeter of the square park

= 4 × Side

= 4 × 250 = 1000 m

Cost for fencing 1 m of square park = Rs 20

Cost for fencing 1000 m of square park = 1000 × 20

= Rs 20000

Question 14:

Find the cost of fencing a rectangular park of length 175 m and breadth 125 m at the rate of Rs 12 per metre.

Answer:

Length (l) of rectangular park = 175 m

Breadth (b) of rectangular park = 125 m

Length of wire required for fencing the park = Perimeter of the park

= 2 × (l + b)

= 2 × (175 + 125)

= 2 × 300

= 600 m

Cost for fencing 1 m of the park = Rs 12

Cost for fencing 600 m of the square park = 600 × 12

= Rs 7200

Question 15:

Sweety runs around a square park of side 75 m. Bulbul runs around a rectangular park with length 60 m and breadth 45 m. Who covers less distance?

Answer:

Distance covered by Sweety = 4 × Side of square park

= 4 × 75 = 300 m

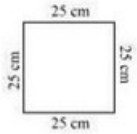
Distance covered by Bulbul = 2 × (60 + 45)

= 2 × 105 = 210 m

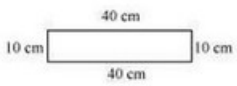
Therefore, Bulbul covers less distance.

Question 16:

What is the perimeter of each of the following figures? What do you infer from the answers?



(a)



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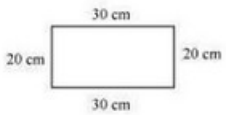
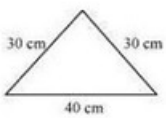


(c)



(d)

Answer:

(a) Perimeter of square = 4 × 25 = 100 cm

(b) Perimeter of rectangle = 2 × (10 + 40) = 100 cm

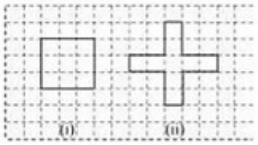
(c) Perimeter of rectangle = 2 × (20 + 30) = 100 cm

(d) Perimeter of triangle = 30 + 30 + 40 = 100 cm

It can be inferred that all the figures have the same perimeter.

Question 17:

Avneet buys 9 square paving slabs, each with a side of $\frac{1}{2}$ m. He lays them in the form of a square.



(a) What is the perimeter of his arrangement [figure (i)]?

(b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement [figure (ii)]?

(c) Which has greater perimeter?

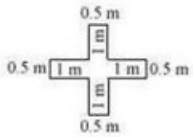
(d) Avneet wonders if there is a way of getting an even greater perimeter. Can you find a way of doing this? (The paving slabs must meet along complete edges i.e. they cannot be broken.)

Answer:

(a) Side of square = $\left(3\times\frac{1}{2}\right)$ m $=\frac{3}{2}$ m

Perimeter of square = $4\times\frac{3}{2}=6$ m

(b) Perimeter of cross = 0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1 = 10 m



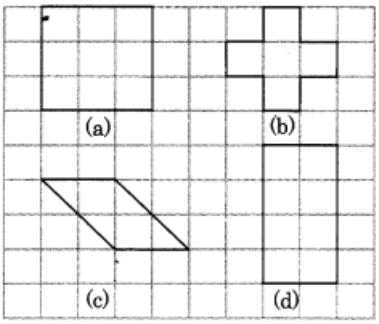
(c) The arrangement in the form of a cross has a greater perimeter.

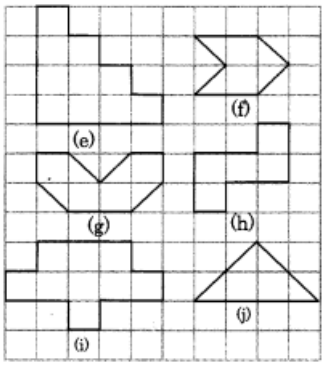
(d) Arrangements with perimeters greater than 10 m cannot be determined.

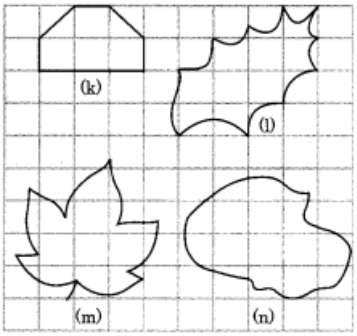
NCERT Solutions For Class 6 Maths Chapter 10 Mensuration Ex 10.2

Exercise 10.2

Ex 10.2 Class 6 Maths Question 1.
Find the areas of the following figures by counting square:







Solution:
(a) Number of full squares = 9
Area of 1 square = 1 sq unit
∴ Area of 9 squares = 9 x 1 sq unit
= 9 sq units.
So, the area of the portion covered by 9 squares = 9 sq units

(b) Number of full squares = 5
∴ Area of the figure = 5 x 1 sq unit = 5 sq units

(c) Number of full squares = 2
Number of half squares = 4
∴ Area of the covered figure = $2 \times 1 + 4 \times \frac{1}{2} = 2 + 2$
= 4 sq units

(d) Number of full squares = 8
∴ Area of the covered portion of the figure = 8 x 1 sq unit
= 8 sq units.

(e) Number of full squares = 10
Area covered by the figure = 10 x 1 sq unit = 10 sq units.

(f) Number of full squares = 2
Number of half squares = 4
∴ Area of the covered figure = $(2 \times 1 + 4 \times \frac{1}{2})$
= (2 + 2) sq units = 4 sq units.

(g) Number of full squares = 4
Number of half squares = 4
∴ Area of the covered figure = $(4 \times 1 + 4 \times \frac{1}{2})$
= (4 + 2) sq units = 6 sq units.

(h) Number of full squares = 5
∴ Area of the covered figure = 5 x 1 sq unit = 5 sq units.

(i) Number of full squares = 9
∴ Area of the covered figure = 9 x 1 sq units
= 9 sq units.

(j) Number of full squares = 2
Number of half squares = 4
∴ Area of the covered figure =$(2 \times 1 + 4 \times \frac{1}{2})$ sq units
= (2 + 2) sq units = 4 sq units.
(k) Number of full squares = 4
Number of half squares = 2
∴ Area of the covered figure = $(4 \times 1 + 2 \times \frac{1}{2})$sq units
= (4 + 4)sq units
= 5sq units

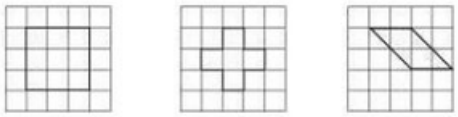
(l) Number of full squares = 4
Number of squares more than half = 3
Number of half squares = 2
∴ Area of the covered figure = $(4 \times 1 + 3 \times 1 + 2 \times \frac{1}{2}$ sq units
= (4 + 3 + 1) sq units = 8 sq units.

(m) Number of full squares = 6
Number of more than half squares = 8

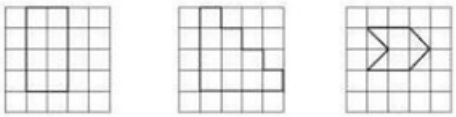
Area of the covered figure = (6 x 1 + 8 x 1) sq units
= (6 + 8) sq units
= 14 sq units.

(n) Number of full squares = 9
Number of more than half squares = 9
∴ Area of the covered figure
= (9 x 1 + 9 x 1) sq units
= (9 + 9) sq units = 18 sq units.

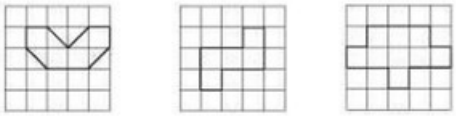
Find the areas of the following figures by counting square:



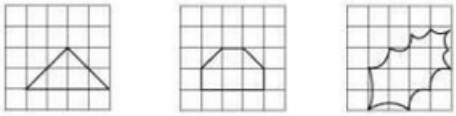
(a) (b) (c)



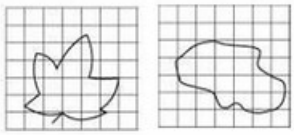
(d) (e) (f)



(g) (h) (i)



(j) (k) (l)



(m) (n)

Answer:

(a) The figure contains 9 fully filled squares only. Therefore, the area of this figure will be 9 square units.

(b) The figure contains 5 fully filled squares only. Therefore, the area of this figure will be 5 square units.

(c) The figure contains 2 fully filled squares and 4 half-filled squares. Therefore, the area of this figure will be 4 square units.

(d) The figure contains 8 fully filled squares only. Therefore, the area of this figure will be 8 square units.

(e) The figure contains 10 fully filled squares only. Therefore, the area of this figure will be 10 square units.

(f) The figure contains 2 fully filled squares and 4 half-filled squares. Therefore, the area of this figure will be 4 square units.

(g) The figure contains 4 fully filled squares and 4 half-filled squares. Therefore, the area of this figure will be 6 square units.

(h) The figure contains 5 fully filled squares only. Therefore, the area of this figure will be 5 square units.
(i) The figure contains 9 fully filled squares only. Therefore, the area of this figure will be 9 square units.
(j) The figure contains 2 fully filled squares and 4 half-filled squares. Therefore, the area of this figure will be 4 square units.
(k) The figure contains 4 fully filled squares and 2 half-filled squares. Therefore, the area of this figure will be 5 square units.
(l) From the given figure, it can be observed that,

Covered Area	Number	Area estimate (sq units)
Fully filled squares	2	2
Half filled squares	–	–
More than half - filled squares	6	6
Less than half - filled squares	6	0

Total area = 2 + 6 = 8 square units

(m) From the given figure, it can be observed that,

Covered Area	Number	Area estimate (sq units)
Fully filled squares	5	5
Half-filled squares	–	–
More than half-filled squares	9	9
Less than half-filled squares	12	0

Total area = 5 + 9 = 14 square units
(n) From the given figure, it can be observed that,

Covered Area	Number	Area estimate (sq units)
Fully filled squares	8	8
Half-filled squares	–	–
More than half-filled squares	10	10
Less than half-filled squares	9	0

Total area = 8 + 10 = 18 square units

NCERT Solutions For Class 6 Maths Chapter 10 Mensuration Ex 10.3

Exercise 10.3

Ex 10.3 Class 6 Maths 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
Solution:
(a) Length of the rectangle = 3 cm
Breadth of the rectangle = 4 cm
∴ Area of the rectangle = length x breadth = 3 cm x 4 cm
= 12 cm^2 or 12 sq cm

(b) Length of the rectangle = 12 m and breadth = 21 m
∴ Area of the rectangle = length x breadth = 12 m x 21 m
= 252 m^2 or 252 sq m

(c) Length of the rectangle = 2 km and breadth 3 km
∴ Area of the rectangle = length x breadth = 2 km x 3 km
= 6 km^2 or 6 sq km

(d) Length of the rectangle = 2 m
and breadth = 70 cm or 0.70 m
∴ Area of the rectangle = length x breadth = 2 m x 0.70 m
= 1.40 m^2 or 1.40 sq m

Ex 10.3 Class 6 Maths Question 2.
Find the areas of the squares whose sides are:
(a) 10 cm
(b) 14 cm
(c) 5 m
Solution:
(a) Side of the square = 10 cm
∴ Area of the square = Side x Side = 10 cm x 10 cm = 100 cm^2 or 100 sq cm
(b) Side of the square = 14 cm
∴ Area of the square = Side x Side = 14 cm x 14 cm = 196 cm^2 or 196 sq cm
(c) Side of the square = 5 m
∴ Area of the square = Side x Side = 5 m x 5 m = 25 m^2 or 25 sq m

Ex 10.3 Class 6 Maths 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?
Solution:
(a) Length of the rectangle = 9 m
and breadth = 6 m
∴ Area of the rectangle = length x breadth
= 9 m x 6 m
= 54 m^2 or 54 sq m

(b) Length of the rectangle = 17 m
and breadth = 3m
∴ Area of the rectangle
= length x breadth = 17 m x 3 m 51 m^2 or 51 sq m

(c) Length of the rectangle = 4 m
and breadth = 14 m
Area of the rectangle = length x breadth
= 4 m x 14 m
= 56 m^2 or 56 sq m
Rectangle (c) has the largest area, i.e., 56 sq m and Rectangle (b) has the smallest area, i.e., 51 sq m.

Ex 10.3 Class 6 Maths Question 4.
The area of a rectangular garden 50 m long is 300 sq m. Find the width of the garden.
Solution:
Length of the rectangular garden = 50 m
Area of the rectangular garden = 300 sq m
∴ Width = Area ÷ Length
= 300 sq m ÷ 50 m = 6 m
Hence width of the garden = 6 m.

Ex 10.3 Class 6 Maths Question 5.
What is the cost of tiling a rectangular plot of land 500 m long and 200 m wide at the rate of ₹8 per hundred sq m?
Solution:
Length of the rectangular plot = 500 m
and the breadth = 200 m
∴ Area of the plot = length x breadth = 500 m x 200 m = 100000 sq m
Now rate of tiling the plot = ₹8 per 100 sq m
Cost of tiling the garden = ₹$(\frac{8}{100}$x 100000) = ₹8000
Hence the required cost = ₹8000

Ex 10.3 Class 6 Maths Question 6.
A table-top measures 2 m by 1 m 50 cm. What is its area in square metres?
Solution:
Length of the table-top = 2 m
and its breadth = 1 m 50 cm or 1.50 m
∴ Area of the table-top = length x breadth

= 2 m x 1.50 m
= 3 m^2 or 3 sq m
Hence, the area of table-top = 3 sq m.

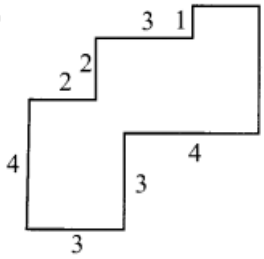
Ex 10.3 Class 6 Maths Question 7.
A room is 4 m long and 3 m 50 cm wide. How many square metres of carpet is needed to cover the floor of the room?
Solution:
Length of the room = 4 m
and its breadth = 3 m 50 cm = 3.5 m
Area of the room = length x breadth
= 4 m x 3.5 m = 14 sq m
Hence, the area of the carpet needed = 14 sq m

Ex 10.3 Class 6 Maths 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.
Solution:
Length of the floor = 5 m
and its breadth = 4 m
∴ Area of the floor = length x breadth
= 5m x 4m = 20sqm
Side of the carpet = 3m
∴ Area of the square carpet = side x side = 3m x 3m = 9 sqm
∴ Area of the floor which is not carpeted = 20 sq m – 9 sq m
= 11 sq m.

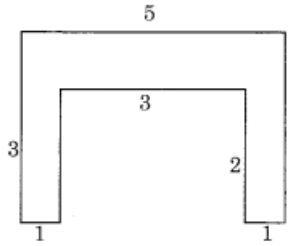
Ex 10.3 Class 6 Maths Question 9.
Five square flower beds each of side 1 m are dug on a piece of land 5 m long and 4 m wide. What is the area of the remaining part of the land?
Solution:
Side of the square flower bed = 1 m.
∴ Area of 1 square flower bed = 1m x 1m = 1sqm.
∴ Area of 5 square flower beds = 1 sq m x 5 = 5 sq m.
Now length of the land = 5 m
and its breadth = 4 m
∴ Area of the land = length x breadth =5m x 4m = 20 sq m
∴ Area of the remaining part of the land = 20 sq m – 5 sq m
= 15 sq m.

Ex 10.3 Class 6 Maths Question 10.
By splitting the following figures into rectangles, find their areas (The measures are given in centimetres).

(a)

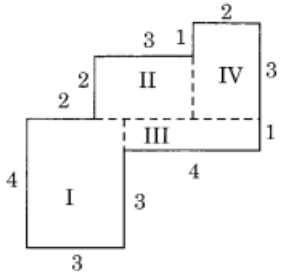


(b)



Solution:

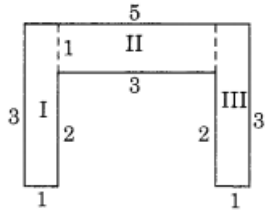
(a)



Splitting the given figure into the rectangles I, II, III and IV, we have

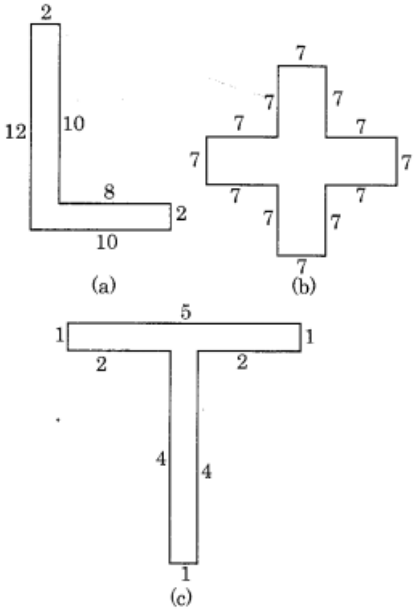
Area of the rectangle I = length x breadth
= 4 cm x 3 cm = 12 sq cm
Area of the rectangle II = length x breadth
= 3 cm x 2 cm = 6 sq cm.
Area of the rectangle III = length x breadth
= 4 cm x 1 cm = 4 sq cm
Area of the rectangle IV = length x breadth
= 3 cm x 2 cm = 6 sq cm
∴ Total area of the whole figure
= 12 sq cm + 6 sq cm + 4 sq cm + 6 sq cm
= 28 sq cm.

(b) Splitting the given figure into the rectangles I, II and III, we get

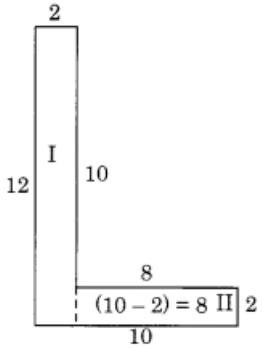


Area of the rectangle I
= 12 cm x 2 cm = 24 sq cm
Area of the rectangle II
= 8 cm x 2 cm = 16 sq cm
Area of rectangle III
= 3 cm x 1 cm = 3 sq cm
∴ Total area of the given figure = 3 sq cm + 3 sq cm + 3 sq cm = 9 sq cm.

Ex 10.3 Class 6 Maths Question 11.
Split the following shapes into rectangles and find their areas (The measures are given in centimetres).

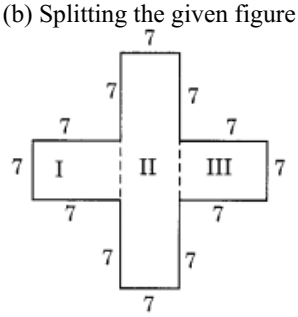


Solution:
(a) Splitting the given figure into the rectangles I and II, we get
Area of the rectangle I
= 12 cm x 2 cm = 24 sq cm
Area of the rectangle II
= 8 cm x 2 cm = 16 sq cm



∴ Total area of the whole figure = 24 sq cm + 16 sq cm = 40 sq cm.

(b) Splitting the given figure into the rectangles I, II and III, we get



Area of the rectangle I
= 7 cm x 7 cm = 49 sq cm
Area of the rectangle II
= 21 cm x 7 cm = 147 sq cm
Area of the rectangle III
= 7 cm x 7 cm = 49 sq cm
∴ Total area of the whole figure
= 49 sq cm + 147 sq cm + 49 sq cm
= 245 sq cm.

Ex 10.3 Class 6 Maths Question 12.
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
Solution:
Length of one tile = 12 cm
Breadth of the tile = 5 cm
∴ Area of 1 tile = length x breadth = 12 cm x 5 cm = 60 sq cm

(a) Length of the rectangular region = 144 cm
Breadth of the region = 100 cm
∴ Area of the rectangular region = length x breadth = 144 cm x 100 cm
= 14400 sq cm
∴ Number of tiles needed to cover the whole rectangular region
= 14400 sq cm ÷ 60 sq cm
= 240 tiles

(b) Length of the rectangular region = 70 cm
Breadth of the region = 36 cm
∴ Area of the rectangular region = length x breadth = 70 cm x 36 cm = 2520 sq cm
∴ Number of tiles needed to cover the whole rectangular region
= 2520 sq cm ÷ 60 sq cm
= 42 tiles.

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:

It is known that,

Area of rectangle = Length × Breadth

(a) l = 3 cm

b = 4 cm

Area = $l \times b$ = 3 × 4 = 12 cm^2

(b) l = 12 m

b = 21 m

Area = $l \times b$ = 12 × 21 = 252 m^2

(c) l = 2 km

b = 3 km

Area = $l \times b$ = 2 × 3 = 6 km^2

(d) l = 2 m

b = 70 cm = 0.70 m

Area = $l \times b$ = 2 × 0.70 = 1.40 m^2

Question 2:

Find the areas of the squares whose sides are:

(a) 10 cm (b) 14 cm (c) 5 m

Answer:

It is known that,

Area of square = $(Side)^2$

(a) Side = 10 cm

Area = $(10)^2$ =100 cm^2

(b) Side = 14 cm

Area = $(14)^2$ = 196 cm^2

(c) Side = 5 m

Area = $(5)^2$ = 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:

It is known that,

Area of rectangle = Length × Breadth

(a) l = 9 m

b = 6 m

Area = $l \times b$ = 9 × 6 = 54 m^2

(b) l = 17 m

b = 3 m

Area = $l \times b$ = 17 × 3 = 51 m^2

(c) l = 4 m

b = 14 m

Area = $l \times b$ = 4 × 14 = 56 m^2

It can be seen that rectangle (c) has the largest area and rectangle (b) has the smallest area.

Question 3:

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

It can be seen that rectangle (c) has the largest area and rectangle (b) has the smallest area.

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:

Area of rectangular plot = 500 × 200 = 100000 m^2

Cost of tiling per 100 m^2 = Rs 8

Cost of tiling per 100000 m^2 = $\frac{8}{100} \times 100000$ = Rs 8000

Question 6:

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

Answer:

Length (l) = 2 m

Breadth (b) = 1 m 50 cm = $\left(1+\frac{50}{100}\right)$ m = 1.5 m

Area = $l \times b$ = 2 × 1.5 = 3 m^2

Question 7:

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

Answer:

Length (l) = 4 m

Breadth (b) = 3 m 50 cm = 3.5 m

Area = $l \times b$ = 4 × 3.5 = 14 m^2

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:

Length (l) = 5 m

Breadth (b) = 4 m

Area of floor = $l \times b$ = 5 × 4 = 20 m^2

Area covered by the carpet = $(\text{Side})^2 = (3)^2$ = 9 m^2

It can be seen that rectangle (c) has the largest area and rectangle (b) has the smallest area.

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:

Area of rectangular plot = 500 × 200 = 100000 m^2

Cost of tiling per 100 m^2 = Rs 8

Cost of tiling per 100000 m^2 = $\frac{8}{100} \times 100000$ = Rs 8000

Question 6:

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

Answer:

Length (l) = 2 m

Breadth (b) = 1 m 50 cm = $\left(1+\frac{50}{100}\right)$ m = 1.5 m

Area = $l \times b$ = 2 × 1.5 = 3 m^2

Question 7:

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

Answer:

Length (l) = 4 m

Breadth (b) = 3 m 50 cm = 3.5 m

Area = $l \times b$ = 4 × 3.5 = 14 m^2

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:

Length (l) = 5 m

Breadth (b) = 4 m

Area of floor = $l \times b$ = 5 × 4 = 20 m^2

Area covered by the carpet = $(Side)^2 = (3)^2$ = 9 m^2

Area not covered by the carpet = 20 − 9 = 11 m^2

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:

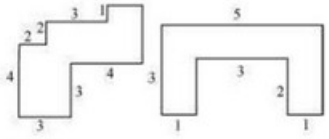
Area of the land = 5 × 4 = 20 m^2

Area occupied by 5 flower beds = 5 × $(Side)^2 = 5 \times (1)^2$ = 5 m^2

∴ Area of the remaining part = 20 − 5 = 15 m^2

Question 10:

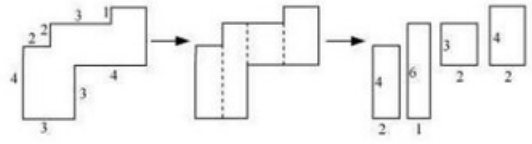
By splitting the following figures into rectangles, find their areas (The measures are given in centimetres).



(a) (b)

Answer:

(a) The given figure can be broken into rectangles as follows.



Area of 1st rectangle = 4 × 2 = 8 cm^2

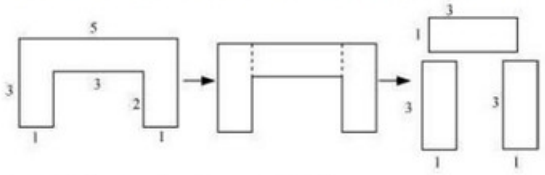
Area of 2nd rectangle = 6 × 1 = 6 cm^2

Area of 3rd rectangle = 3 × 2 = 6 cm^2

Area of 4th rectangle = 4 × 2 = 8 cm^2

Total area of the complete figure = 8 + 6 + 6 + 8 = 28 cm^2

(b) The given figure can be broken into rectangles as follows.



Area of 1st rectangle = 3 × 1 = 3 cm^2

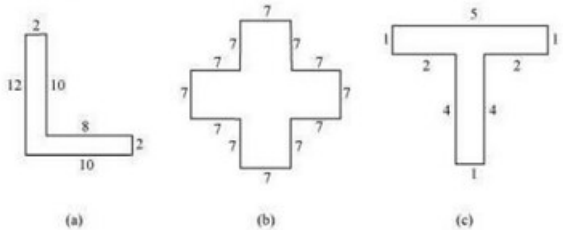
Area of 2nd rectangle = 3 × 1 = 3 cm^2

Area of 3rd rectangle = 3 × 1 = 3 cm^2

Total area of the complete figure = 3 + 3 + 3 = 9 cm^2

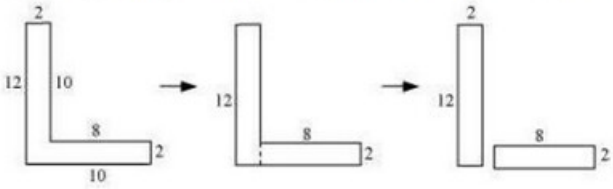
Question 11:

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



Answer:

(a) The given figure can be broken into rectangles as follows.

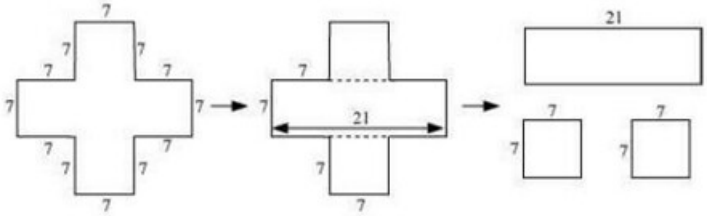


Area of 1st rectangle = 12 × 2 = 24 cm^2

Area of 2nd rectangle = 8 × 2 = 16 cm^2

Total area of the complete figure = 24 + 16 = 40 cm^2

(b) The given figure can be broken into rectangles as follows.



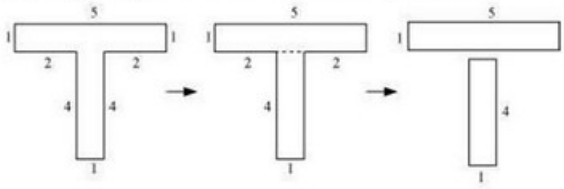
Area of 1st rectangle = 21 × 7 = 147 cm^2

Area of 2nd square = 7 × 7 = 49 cm^2

Area of 3rd square = 7 × 7 = 49 cm^2

Total area of the complete figure = 147 + 49 + 49 = 245 cm^2

(c) The given figure can be broken into rectangles as follows.



Area of 1st rectangle = 5 × 1 = 5 cm^2

Area of 2nd rectangle = 4 × 1 = 4 cm^2

Total area of the complete figure = 5 + 4 = 9 cm^2

Question 12:

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:

(a) Total area of the region = 100 × 144 = 14400 cm^2

Area of one tile = 12 × 5 = 60 cm^2

Number of tiles required = $\frac{14400}{60} = 240$

Therefore, 240 tiles are required.

(b) Total area of the region = 70 × 36 = 2520 cm^2

Area of one tile = 60 cm^2

Number of tiles required = $\frac{2520}{60} = 42$

Therefore, 42 tiles are required.