Exercise 20.4

Q.1 Find the area of rectangle, whose

(i) length = 6 cm, breadth = 3 cm

(ii) length = 8 cm, breadth = 3 cm

(iii) length = 4.5 cm, breadth = 2 cm

Solution: (i) $l = 6\text{cm}$, $b = 3\text{cm}$

Area of rectangle $= l \times b$

$= 6 \times 3 = 18\ \text{cm}^2$

(ii) $l = 8\text{cm}$, $b = 3\text{cm}$

$A = l \times b = 8 \times 3 = 24\ \text{cm}^2$

(iii) $l = 4.5\text{cm}$, $b = 2\text{cm}$

Then Area $= l \times b$

$= 4.5 \times 2 = 9\ \text{cm}^2$

Q.2 Find the area of square whose side is:

(i) 5 cm (ii) 4.1 cm (iii) 5.5 cm (iv) 2.6 cm

Solution (i) $\because$ Area of square $= (\text{Side})^2$

$= (5)^2 = 25\ \text{cm}^2$

(ii) Area of square $= (\text{side})^2$

$= (4.1)^2 = 16.81\ \text{cm}^2$

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(iii) Area of square $= (\text{side})^2 = (5.5)^2 = 30.25\ cm^2$

(iv) Area of square $= (\text{side})^2$
$= (2.6)^2$
$= 6.76\ cm^2$

Q.3 The area of rectangle is $49\ cm^2$ and its breadth is 2.8 cm. Find the length of the rectangle.

Solution: We are given, Area of rectangle $= 49\ cm^2$
breadth $= 2.8\ cm$

$\therefore$ length $= \frac{\text{Area}}{\text{breadth}} = \frac{49}{2.8} = 17.5\ cm$

Q.4 The side of a square is 70 cm. Find its area and perimeter.

Solution: Side of square $= 70\ cm$.

Area $= (\text{side})^2 = (70)^2$
$= 4900\ cm^2$

Also, Perimeter $= 4 \times \text{side}$
$= 4 \times 70 = 280\ cm$.

Q.5 The area of rectangle is $225\ cm^2$ and its one side is 25 cm, find its other side.

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Solution: It is given that

Area of rectangle = $225\ cm^2$

one side = 25 cm

Then, other side = $\frac{225}{25}$

= 9 cm

Q6 What will happen to the area of rectangle if its

(i) length and breadth are trebled

(ii) length is doubled and breadth is same

(iii) length is doubled and breadth is halved.

Solution: Let original length and breadth of rectangle be l and b.

Then original area = $l \times b$

If length and breadth trebled, then new length and breadth are $3l$ and $3b$

New area = $3l \times 3b$

= $9lb$

Hence New area will be 9 times the original area.

(ii) If length is doubled and breadth remain same,

Then new area = $2l \times b = 2lb$

∴ Here Area will be twice the original area.

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(iii) If length is doubled, then new length $= 2l$

If breadth is halved, then new breadth $= \frac{b}{2}$

New area $= 2l \times \frac{b}{2} = lb$

$\therefore$ Area remains same as original area.

Q.7 What will happen to the area of square if its side is :

(i) Tripled (ii) Increased by half of it.

Solution: Let original length of each side $= a$ cm

Area $= a^2$

(i) If each side is tripled, then new length $= 3a$

New area $= (3a)^2$

$= 9a^2$

$\therefore$ New area is 9 times the original area

(ii) If each side increased by half, then length of each

side $= a + \frac{a}{2} = \frac{3a}{2}$

$\therefore$ New area $= \left(\frac{3a}{2}\right)^2 = \frac{9}{4}a^2$

$\therefore$ New area will be $\frac{9}{4}$ times the original area.

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Q8 Find the Perimeter of a rectangle whose area is 500 cm^2 and breadth is 20 cm.

Solution: It is given that,

Area of rectangle = 500 cm^2

breadth = 20 cm

$\Rightarrow l \times b = 500$

$\Rightarrow l \times 20 = 500 \Rightarrow l = \frac{500}{20}$

$\Rightarrow l = 25$ cm

Now, Perimeter = $2(l+b)$

$= 2(25+20) = 2 \times 45$

$= 90$ cm.

Q9 A rectangle has the area equal to that of a square of side 80 cm. If the breadth of rectangle is 20 cm, find its length.

Sol: $\because$ Area of rectangle = Area of square

$\Rightarrow l \times b =$ Side $\times$ Side. { $\because$ side of square = 80 cm, breadth of rectangle = 20 cm }

$\Rightarrow l \times 20 = 80 \times 80$

$\Rightarrow l = \frac{6400}{20} = 320$ cm

Q10 Area of a rectangle of breadth 17 cm is 340 cm^2. Find the Perimeter of the rectangle.

Solution: $\because$ we are given that

Area of rectangle = 340 cm^2

breadth = 17 cm

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Then, length $= \frac{\text{Area}}{\text{breadth}} = \frac{340}{17} = 20$ cm.

So, perimeter $= 2(l+b)$
$= 2(20+17) = 2 \times 37$
$= 74$ cm

Q.11 A Marble tile measures 15 cm x 20 cm. How many tiles will be required to cover a wall size of 6m x 4m?

Solution: Area of wall $= 6 \times 4 = 24\ m^2$

Area of Marble tile $= 15\text{cm} \times 20\text{cm}$
$= 300\ cm^2$
$= \frac{300}{10000}\ m^2 = 0.03\ m^2$

Then, Number of Marble tiles
$= \frac{\text{Area of wall}}{\text{Ar. of Marble tile}} = \frac{24}{0.03} = \frac{2400}{3}$
$= 800$ tiles.

Q.12 A Marble tile measures 10cm x 12cm. How many tiles will be required to cover a wall of size 3m x 4m? Also find the total cost of tiles at the rate of Rs 2 per tile.

Solution: Area of wall $= 3\text{m} \times 4\text{m} = 12\ m^2$

Area of tile $= 10\text{cm} \times 12\text{cm} = 120\ cm^2$
$= 0.012\ m^2$

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Then Number of tiles = $\frac{\text{Area of wall}}{\text{Area of one tile}}$

$= \frac{12}{0.012} = \frac{12000}{12}$

$= 1000$ tiles.

$\because$ Cost of one tile = Rs. 2

$\therefore$ cost of 1000 tiles = Rs. 2×1000

= Rs. 2000

Q.13 One side of a square plot is 250 m, find the cost of levelling it at the rate of Rs. 2 per sq unit meter.

Sol Side of square plot = 250 m.

Area of plot = 250×250 m^2

= 62500 m^2

$\because$ Rate of levelling $1\ m^2$ = Rs. 2

hence total cost of levelling = Rs 62500×2

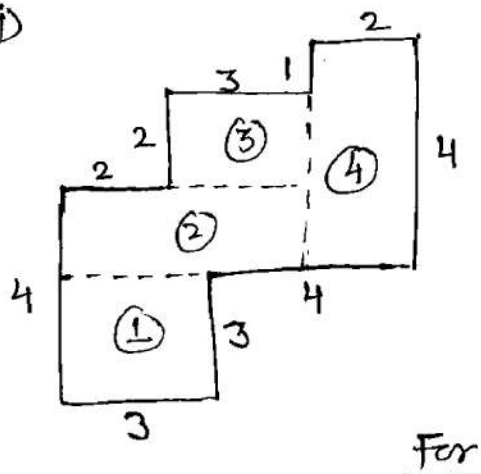
= 1,25000

Q.14 The following figures have been split into rectangle Find their areas. (The measures are given in centimeter

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(i)



(i)

For finding the area we divide the whole figure in 4 rectangles.

For figure I → $l = 3\,cm$, $b = 3\,cm$

Area $= 3 \times 3 = 9\,cm^2$

For fig-2 : $l = 3+2 = 5\,cm$, $b = 4-3 = 1\,cm$

$\therefore A = l \times b = 5 \times 1 = 5\,cm^2$

For fig 3 : $l = 3\,cm$, $b = 2\,cm$

$\therefore A = l \times b = 3 \times 2 = 6\,cm^2$

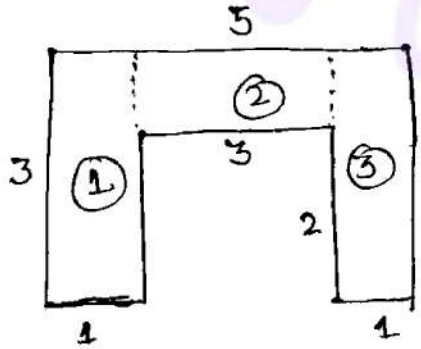
For fig 4 : $l = 4\,cm$, $b = 2\,cm$,

$\therefore A = l \times b = 4 \times 2 = 8\,cm^2$

here, Total Area of figure $= 9 + 5 + 6 + 8$

$= 28\,cm^2$

(ii)



For finding area, we will divide the whole figure in 3 rectangles.

figure-I : $l = 3\,cm$, $b = 1\,cm$

$\Rightarrow A = 3 \times 1 = 3\,cm^2$

figure-2 : $l = 3\,cm$, $b = 3-2 = 1\,cm$

$A = l \times b = 3 \times 1 = 3\,cm^2$

figure-3, $l = 3\,cm$, $b = 1\,cm$

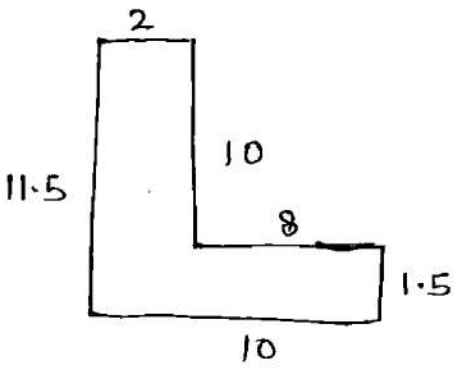
$\Rightarrow A = 3 \times 1 = 3\,cm^2$

$\therefore$ Total area $= 3 + 3 + 3 = 9\,cm^2$

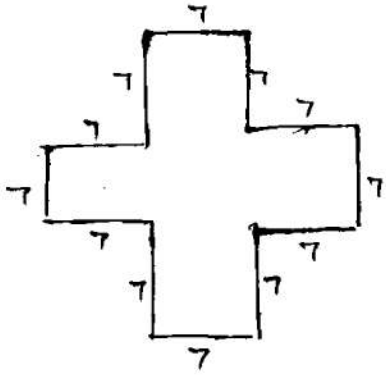
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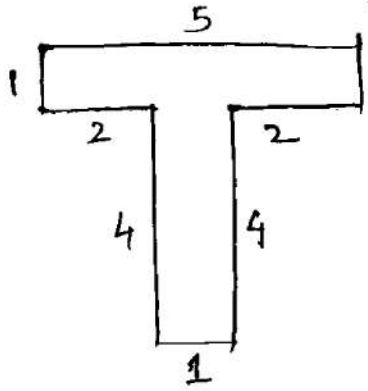
Q.15 Split the following shapes into rectangles and find the area of each. (The measures are given in centimeters)



(i)



(ii)



(iii)

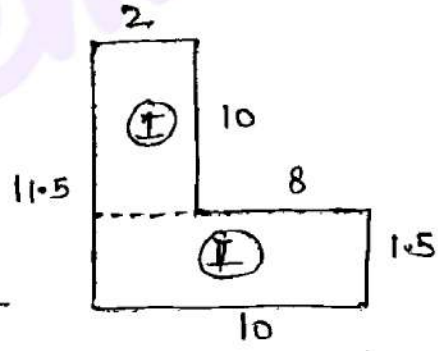
Solution:

(i) Area of rectangle I = $l \times b$

$= 2 \times 10 = 20\ cm^2$

Area of rectangle II = $10 \times 1.5\ cm^2$

$= 15\ cm^2$

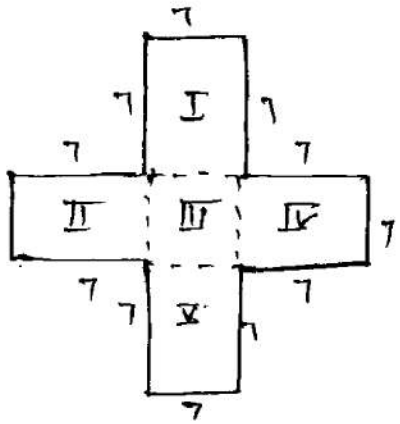


$\therefore$ Total Area = Area of I + Area of II

$= 20 + 15$

$= 35\ cm^2$

(ii) Here, the figure is divided into 5 squares of same dimension

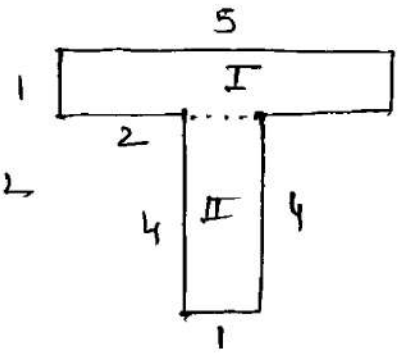


Area of one square $= 7 \times 7 = 49\ cm^2$

$\therefore$ Total Area $= 5 \times 49 = 245\ cm^2$

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(iii)



Area of I rectangle $= l \times b$
$= 5 \times 1 = 5\ cm^2$

Area of II $= l \times b$
$= 4 \times 1 = 4\ cm^2$

$\therefore$ Total Area of figure $= 4 + 5 = 9\ cm^2$

Q.16 How many tiles with dimensions 5 cm and 12 cm will be needed to fit a region whose length and breadth are respectively.

(i) 100 cm and 144 cm (ii) 70 cm and 36 cm

Sol: Area of 1 tile $= l \times b$
$= 5 \times 12 = 60\ cm^2$

(i) Area of rectangular region $= 100 \times 144\ cm^2$
$= 14400\ cm^2$

No. of tiles needed $= \frac{14400}{60} = 240$ tiles.

(ii) Area of region $= 70 \times 36\ cm^2 = 2520\ cm^2$

No. of tiles $= \frac{\text{Area of region}}{\text{Area of one tile}} = \frac{2520}{60}$

$= 42$ tiles

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