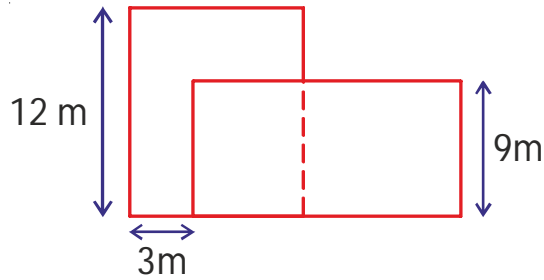


01 The figure is formed by placing a rectangle on top of a square. If the square and the rectangle have the same area, what is the perimeter of the figure ?



$$\text{Area of square} = 12 \times 12$$

$$= 144 \text{ cm}^2$$

Length of rectangle

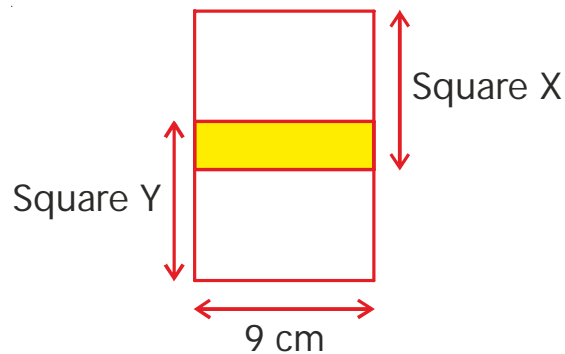
$$= 144 \div 9 = 16 \text{ m}$$

$$3 + 16 = 19 \text{ m}$$

$$12 + 12 + 19 + 19 = 62 \text{ m}$$

The perimeter is 62 m

02 Two identical squares X and Y are used to make the figure shown below. $\frac{1}{3}$ of square X overlaps with $\frac{1}{3}$ of square Y. What is the area of the unshaded area in the figure ?



$$\text{Length of } \frac{1}{3} \text{ of the side of a square} = 9 \div 3 = 3 \text{ cm}$$

$$\text{Length of } \frac{1}{3} \text{ of the side of a square} = 2 \times 3 = 6 \text{ cm}$$

$$\text{Area of the unshaded portion of square X} = 9 \times 6 = 54 \text{ cm}^2$$

$$2 \times 54 = 108 \text{ cm}^2$$

The area of the unshaded area in the figure is 108 cm^2

03

The figure below is not drawn to scale. It is made up of two rectangles, X and Y and a square Z. The area of X is 21 m^2 and the area of Y is 35 m^2 . The lengths of X, Y and Z are whole numbers. Find the area of square Z.



$$\text{Area of rectangle X} = 21 \text{ m}^2$$

$$21 = 7 \times 3 = 21 \times 1$$

$$\text{Length of rectangle X} = 7 \text{ m or } 21 \text{ m}$$

$$\text{Breadth of rectangle X} = 3 \text{ m or } 1 \text{ m}$$

$$\text{Area of rectangle Y} = 35 \text{ m}^2$$

$$35 = 7 \times 5 = 35 \times 1$$

$$\text{Since length of rectangle X} = \text{length of rectangle Y}$$

$$\text{Length of rectangle X} = 7 \text{ m}$$

$$\text{Breadth of rectangle X} = 3 \text{ m}$$

$$\text{Length of rectangle Y} = 7 \text{ m}$$

$$\text{Breadth of rectangle Y} = 5 \text{ m}$$

$$\text{Length of the side of square Z}$$

$$= \text{Breadth of rectangle X} + \text{breadth of rectangle Y}$$

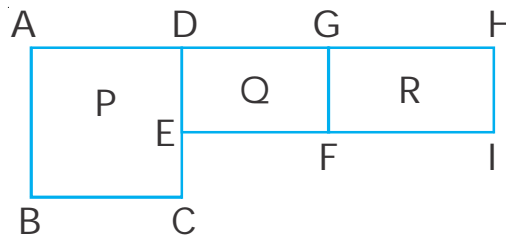
$$= 3 + 5 = 8 \text{ m}$$

$$8 \times 8 = 64 \text{ m}^2 \Rightarrow \text{The area of square Z is } 64 \text{ m}^2$$

04

The length of the sides of squares P and Q are whole numbers (in cm). their total area is 100 cm^2 . R is a rectangle such that $AD = GH$

- (a) Find the area of the rectangle R
(b) Find the perimeter of the whole figure



Area of square P	Area of square Q	Total area
$9 \times 9 = 81 \text{ cm}^2$	$5 \times 5 = 25 \text{ cm}^2$	$81 + 25 = 106 \text{ cm}^2$ (X)
$9 \times 9 = 81 \text{ cm}^2$	$4 \times 4 = 16 \text{ cm}^2$	$81 + 16 = 97 \text{ cm}^2$ (X)
$8 \times 8 = 64 \text{ cm}^2$	$6 \times 6 = 36 \text{ cm}^2$	$64 + 36 = 100 \text{ cm}^2$ (✓)

Each side of P = 8 cm

Each side of Q = 6 cm

Given that $AD = GH$

$GH = 8 \text{ cm}$

$GF = DE = 6 \text{ cm}$

(a) Area of rectangle R = 8×6

(b) $EC = DC - DE = 8 - 6 = 2 \text{ cm}$

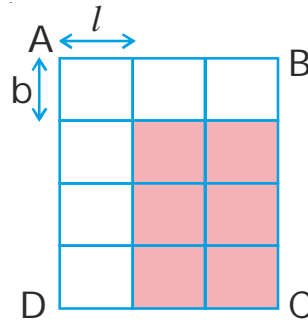
$AH + HI + IE + EC + CB + BA$

$= (8 + 6 + 8) + 6 + (8 + 6) + 2 + 8 + 8 = 60 \text{ CM}$

The perimeter of the whole figure is 60 cm

05

Square ABCD has been divided into 12 identical rectangles. The area of the shaded portion is 72 cm^2 . Find the length (l) and breadth (b) of each rectangle.



Method 1:

$$\text{Area of 6 small rectangles} = 72 \text{ cm}^2$$

Area of 12 small rectangles or the whole figure

$$= 2 \times 72 = 144 \text{ cm}^2$$

$$= 12 \text{ cm} \times 12 \text{ cm}$$

The length of each side of square ABCD is 12 cm.

$$l = 12 \div 3 = 4 \text{ cm}$$

$$b = 12 \div 4 = 3 \text{ cm}$$

Method 2:

$$\text{Area of each small rectangle} = 72 \div 6 = 12 \text{ cm}^2$$

Possible values of l and b are 12 cm and 1 cm, 6 cm and 2 cm, 4 cm and 3

But $3 \times l$ should be equal to $4 \times b$ (see figure). This happens only when $l = 4 \text{ cm}$ and $b = 3 \text{ cm}$