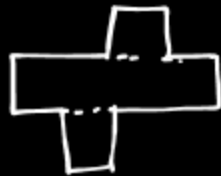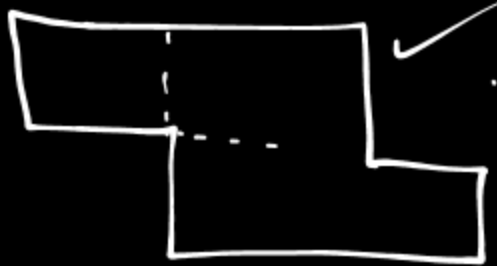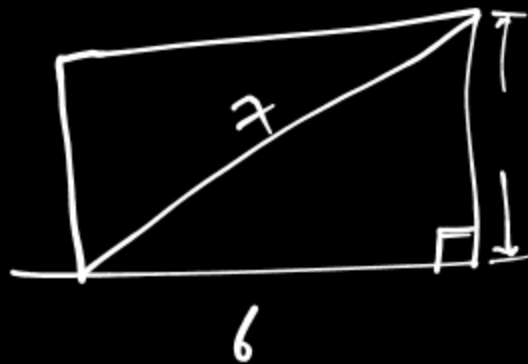# Perimeter and Area of Rectilinear Figures

# Perimeter and Area of Rectilinear figures

$x$

$6$

# ① Rectangle

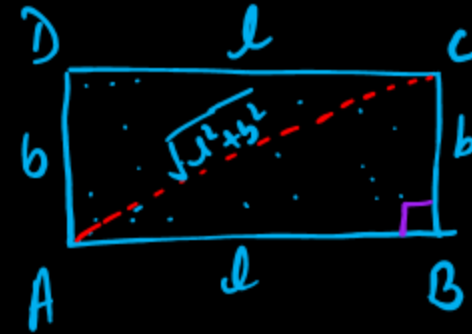$$\text{Perimeter} = 2(l+b) \quad \underline{\text{unit}}$$

$$\boxed{\text{Area} = l \times b} \qquad \text{unit}^2$$

$$\text{length of diagonal} = \sqrt{l^2+b^2} \quad \text{unit}$$

$$\boxed{l = \frac{\text{Area}}{b}}$$

$$\boxed{b = \frac{\text{Area}}{l}}$$



In right triangle ABC, using __P.T.__

$$AC^2 = AB^2 + BC^2$$
$$AC^2 = l^2 + b^2$$
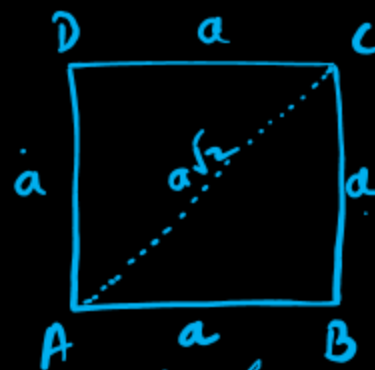$$AC = \sqrt{l^2+b^2}$$

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① Square.

Perimeter = 4a units

Area = $a^2$ unit²

Side of the square = $\sqrt{area}$

Diagonal = $\textcircled{a}\sqrt{2}$ ⟹ ✓

$\sqrt{2} \simeq 1.414$



$\sqrt{2a^2}$

$a\sqrt{2}$

$2a^2 = 25$

$\textcircled{a^2}$   $\dfrac{25}{2}$   1.5 unit² ✓

area =

$AC^2 = 2a^2$

$AC =$

Square

5 units

a a=?

area =

$AB^2 + BC^2 = S^2$

$a^2 + a^2 = 25$

121 cm²
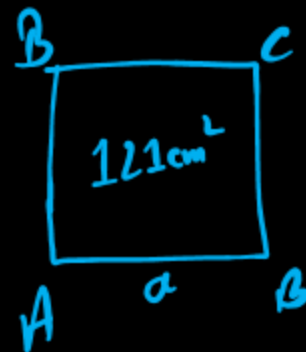
what would be the length of its sides.

$a^2 = 121$

$a = \sqrt{121}$

a = 11 cm

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$$\left(\underline{Diagonal}\right)^2 = \left(a\sqrt{2}\right)^2$$

$$\left(Diagonal\right)^2 = a^2 \times 2$$

$$\frac{1}{2}\left(Diagonal\right)^2 = a^2$$

$$a^2 = \frac{1}{2}\left(Diagonal\right)^2$$

$$Area = \frac{1}{2}\left(Diagonal\right)^2$$

$$\boxed{3}\sqrt{2}$$

$$\frac{}{\sqrt{2 \times 3^2}} = \sqrt{2 \times 9} = \sqrt{18}$$

$$\sqrt{18} = 3\sqrt{2}$$

$$\boxed{Area = a^2}$$



$a$   $a$

$a\sqrt{2}$   $a$

$a$

$$\left(2\right)^2 = \left(2\right)^2$$

$$u = 4$$

$5cm$ (boxed square with diagonal)
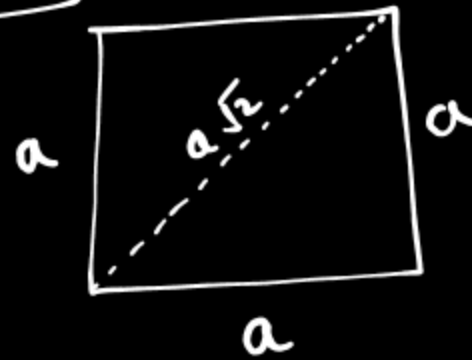
$$area = \frac{1}{2}\left(diagonal\right)^2$$

$$= \frac{1}{2} \times (5)^2$$

$$= \frac{25}{2} = 12.5$$

$$l, b, h$$
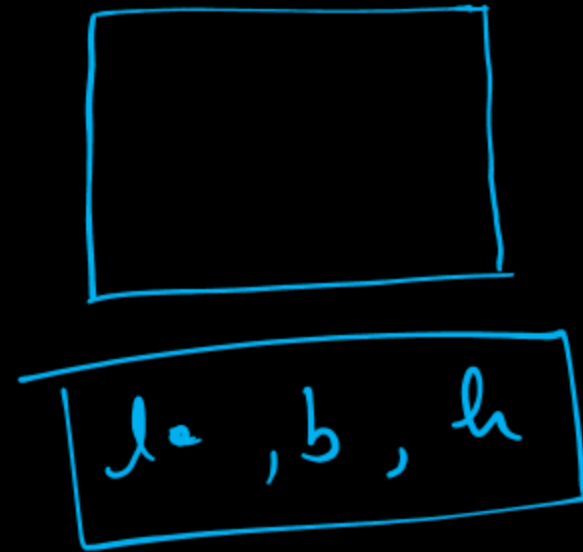
Area of four walls = ?

Diagonal of Room = ?

$y^2 - 2^2 = 2^2$

$\dfrac{\begin{array}{c} 13 \\ 13 \end{array}}{9}$

Q. Find the area of a rectangle plot one side of which is $\underline{48\,m}$ and its diagonal is $50\,m$.

Area = $\dfrac{l \times b}{}$

Area = $\dfrac{48 \times 14 \ m^2}{672 \ m^2}$

$50^2 = b^2 + 48^2$

$b^2 = \dfrac{50^2 - 48^2}{}$

$b^2 = (98)(2)$

$b^2 = 196$

$b = \sqrt{196} = 14$

$\boxed{b = 14m}$

$\boxed{br = 14m}$

$50\,m$

$48\,m$

$\boxed{a^2 - b^2 = (a+b)(a-b)} \checkmark$

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4 cm

2 cm.

8 cm²
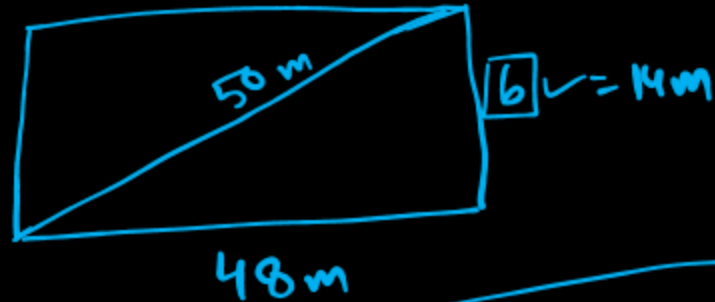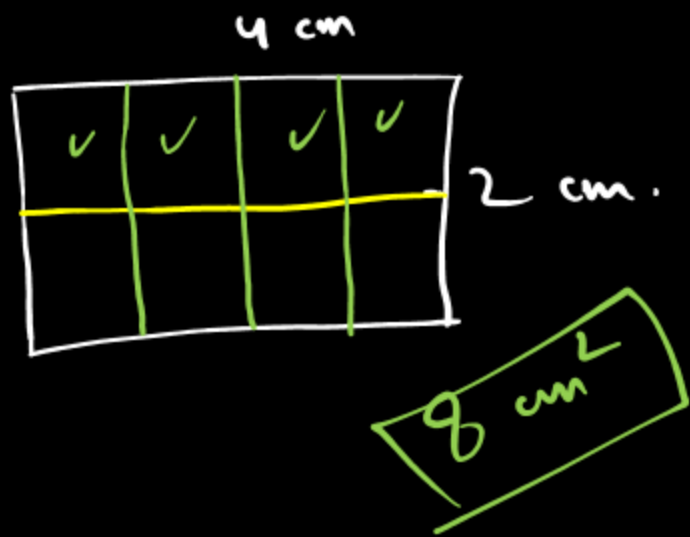
Area of four walls of a room. $= 2(l \times h) + 2(b \times h)$ ✓

$l, b, h$

$$= 2 lh + 2 bh$$

$$= 2h(l + b) \quad \underline{units^2}$$

Length of diagonal of the room : $\sqrt{l^2 + b^2 + h^2}$ $\quad \underline{units}$

rt.
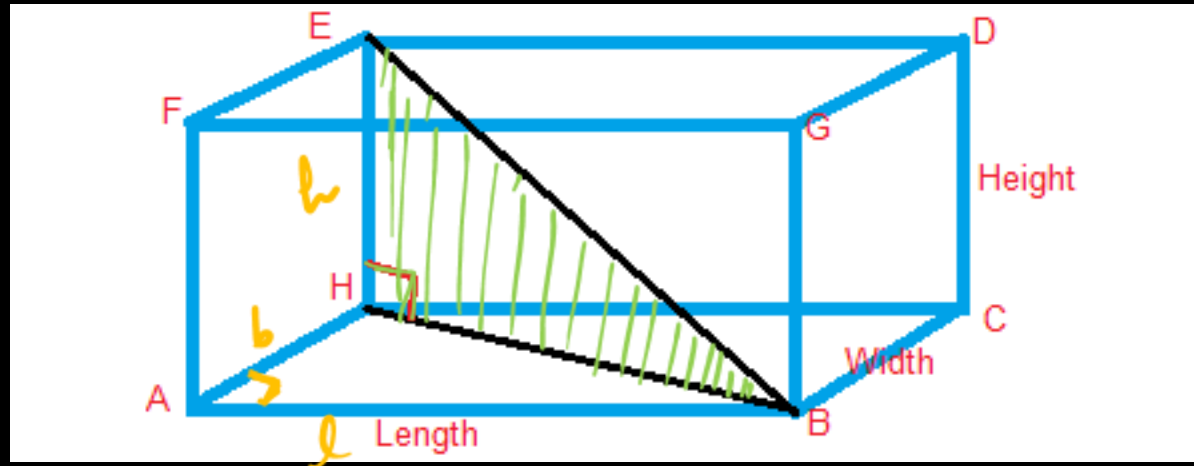
$$\boxed{\Delta EHB}$$

P.T.

$$HB^2 = l^2 + b^2$$

$$\boxed{HB = \sqrt{l^2 + b^2}} \checkmark$$

$$\boxed{EB = \sqrt{l^2 + b^2 + h^2}} \checkmark$$

$$EB^2 = h^2 + HB^2$$

$$= h^2 + \left(\sqrt{l^2 + b^2}\right)^2$$

$$= h^2 + l^2 + b^2$$

Q. A rectangular park is 45 m long and 30 m wide. A path 2.5m wide is constructed outside the park. Find the area of the path.

Area of path $= (35 \times 50) - (45 \times 30)$

$= \left[ 1750 - 1350 \right] m^2$

$= 400\ m^2$
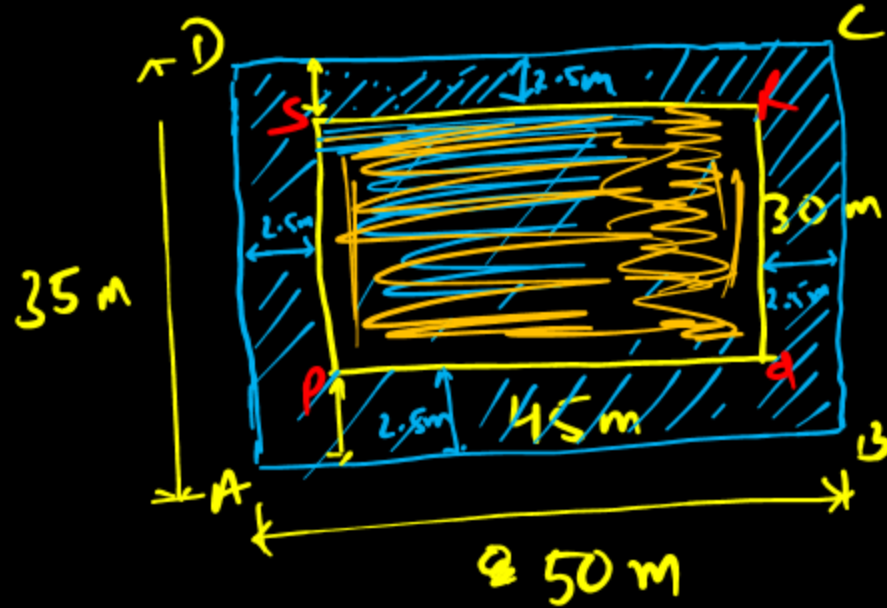
**Q.** A rectangular lawn is 30m by 20m. It has two roads each 2m wide running in the middle of it, one parallel to the length and other parallel to the breadth. Find the area of the roads.

Area of road = $(30 \times 2) + (20 \times 2) - (2 \times 2)$

$= 60 + 40 - 4$

$= 96 \ m^2$
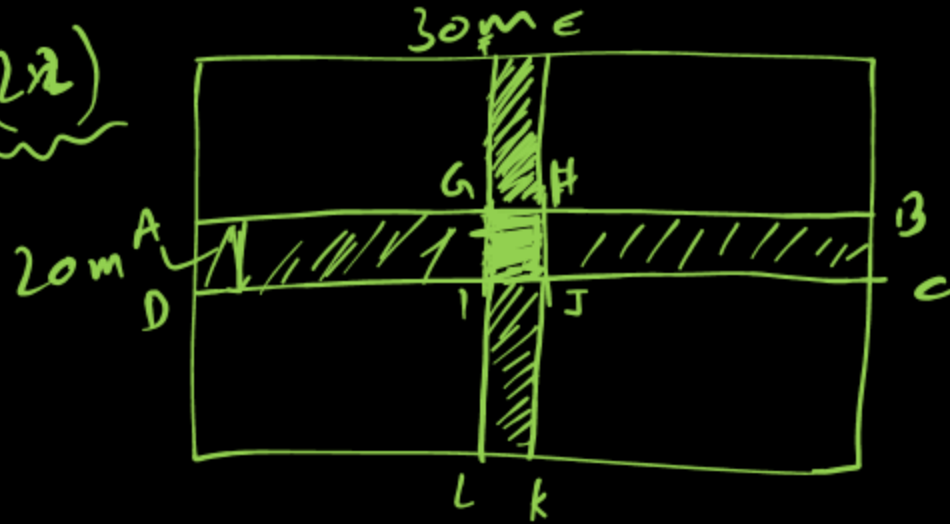
$$\frac{22 + 2r + 16 + 2r + 22}{2r + 12 + 2r + n + 2r} = \frac{AB}{A \cdot B} = \frac{4r + 60}{6r + 24}$$

$$6r + 24 = 4r + 60$$
$$6r - 4r = 60 - 24$$
$$2r = 36$$
$$r = \frac{36}{2} = 18$$

A ⟵ 22 ⟶    12    16    12    22    B

(A) 12　　　(B) 16　　　(C) 18　　　(D) 22　　　(E) 36

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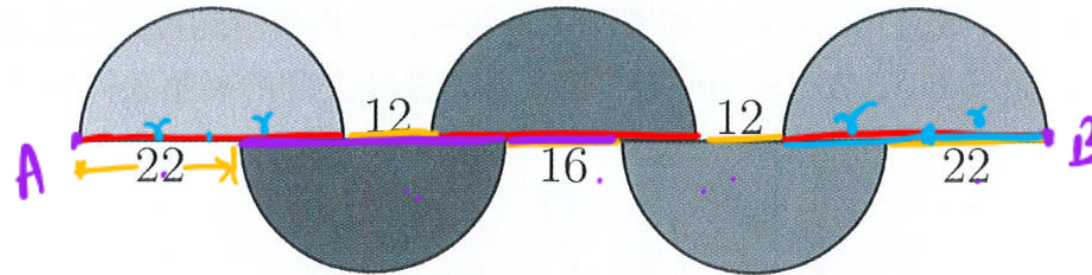
10000

10001

~~10000~~

999999

100009

980000

989998

6⁴    9⁹

5
8

21    -4

17

+2

3, 4, 5

4, 5, 9

5, 9, 10

9, 10, 11