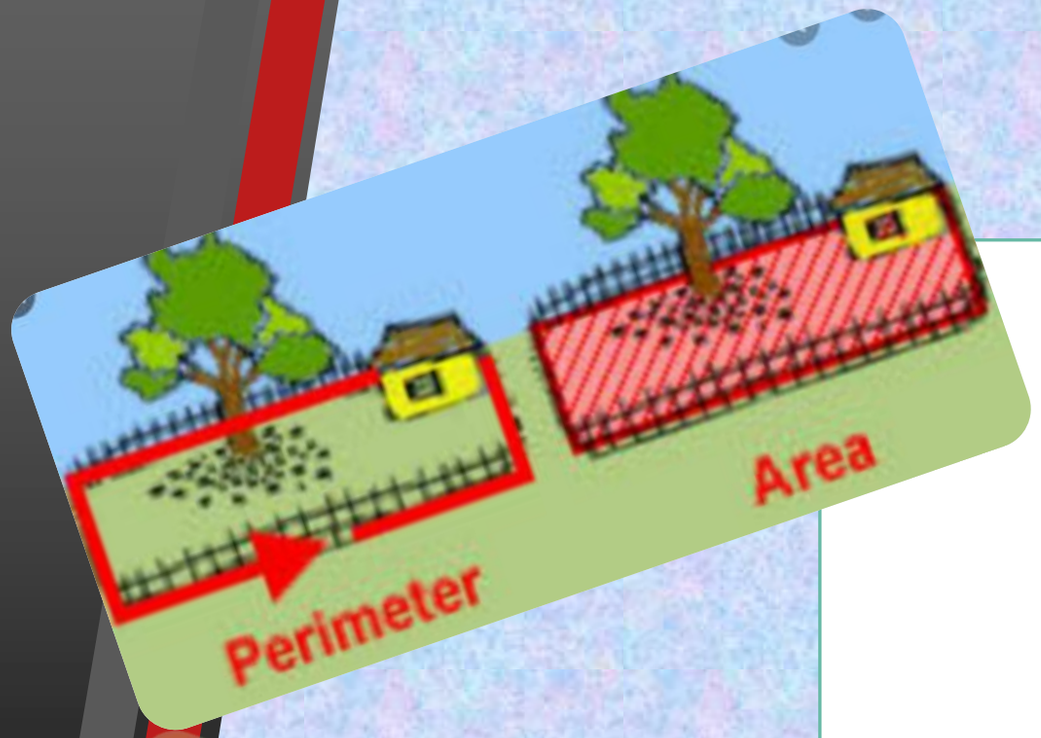
MAHARISHI VIDYA MANDIR – HYDERABAD



JAI GURU DEV

CLASS: VII

SUBJECT: MATHEMATICS

Chapter :18

PERIMETER AND AREA

MODULE-2

DAY-83

- Learnt Introduction to Perimeter,
- Solved Ex: 18.1(1^{st} to 7^{th} sum)

  Finding the perimeter of the given figure and also finding the measure of the other sides .

- Solving Ex: 18.1(8th to 10th sum)
- Introduction to Area.
- Solving Exercise : 18.2 (1st to 5th sum)

Using the formulae of Area of rectangle, square and four walls of the room.

EXERCISE : 18.1

8)The perimeter of a rectangle is equal to the perimeter of the square of side 15cm. If the side of the rectangle is 20cm long, what is its breadth?

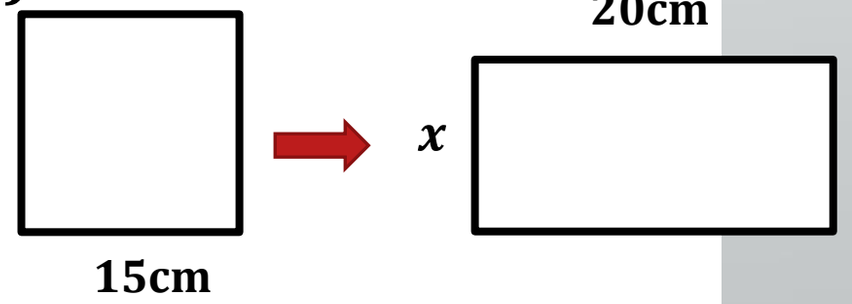
Sol:

The perimeter of a rectangle = Perimeter of the square

Side of square = 15cm

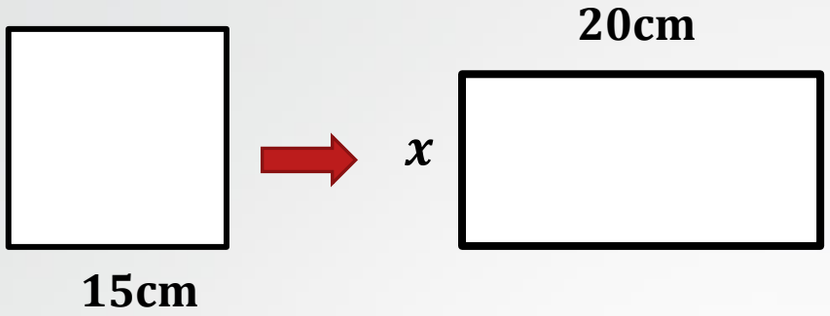
Length of a rectangle = 20cm,

Breadth of a rectangle = ?(Let it be 'x' cm)



Perimeter of a square = 4 × side

$$= 4 \times 15 = 60\text{cm}$$



Perimeter of the square = Perimeter of a rectangle

$\therefore$ **Perimeter of a rectangle = 60cm**

Perimeter of a rectangle $= 2(l + b)$

$$60 = 2(l + b)$$

$$60 = 2(20 + b)$$

$$20 + b = 60/2$$

$$20 + b = 30$$

$$b = 30 - 20 = 10\text{cm}$$

$\therefore$ **Breadth of a rectangle = 10cm**

9)The perimeter of a parallelogram is 72 cm. If one side measure 16cm,what is the measure of the other side?

Sol: Perimeter of the parallelogram $= 72$cm

If one side measure $= 16$cm

Measure of the other side $=?$

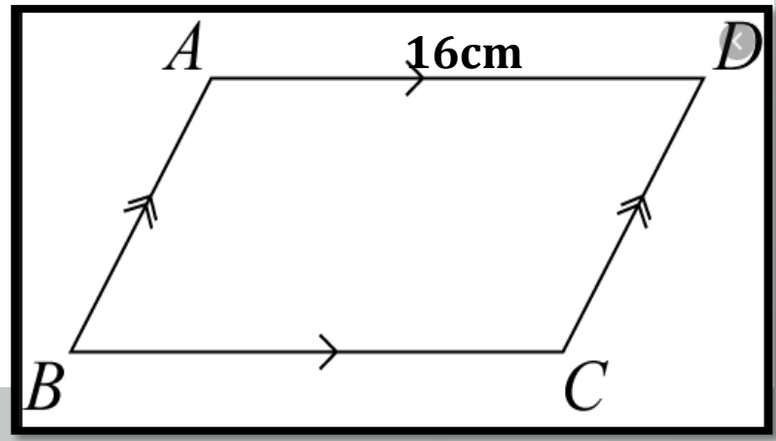
Measure of the other side $=$ (Perimeter/2) $-$ given side

$= (72/2) - 16$

$= 36 - 16$

$= 20$

$\therefore$ Other side of parallelogram $= 20$cm



10)Rakhi takes 5 rounds of a garden which is hexagonal in shape. She covers a total distance of 1500m. What is the side of the hexagon?

Sol:

Distance covered by Rakhi in 5 rounds = 1500m

Distance covered in 1 round = 1500/5 = 300m

Perimeter of the hexagonal garden = 300m

Number of sides of hexagon = 6

$$\text{Side of the hexagon} = \frac{Perimeter}{Number\ of\ sides}$$

$$= 300/6 = 50\ \text{m}$$

∴ Measure of each side of the hexagon = 50m

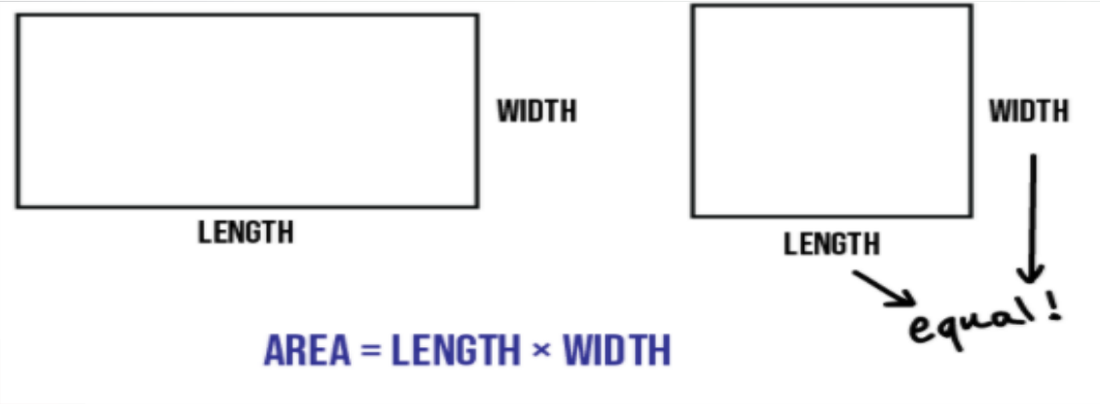
AREA

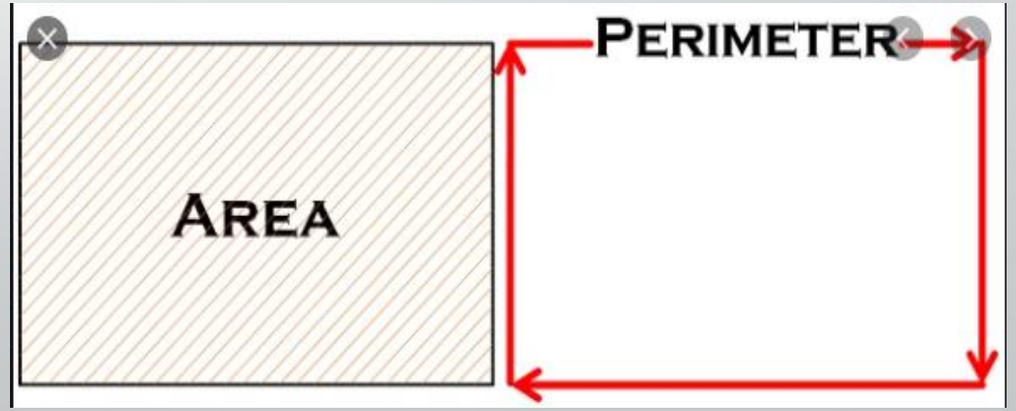
Definition:

- **The measurement of the region enclosed by a plane figure is called its area.**

The amount of space inside the boundary of a flat (2-dimensional) object such as a triangle or circle, or surface of a solid (3-dimensional) object.

The units of area are square centimeter (written as cm^2), square meter(m^2) etc.





Area Formulae of different figures

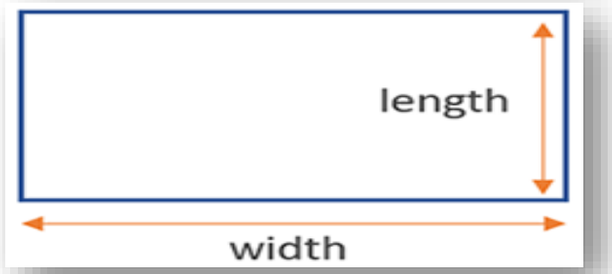
- Area of a rectangle = length × width
- Area of square = side x side = $(side)^2$
- Area of Triangle = $(\frac{1}{2})$ base × height
- Area of the circle = $A = \pi r^2$, where r = radius of the circle
- Area of parallelogram = b × h, where b = base and h = vertical height

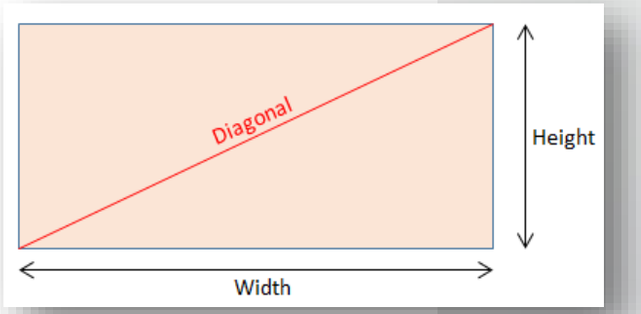
Area of a rectangle

Area of a rectangle= length × breadth

Length = $\frac{area}{breadth}$, Breadth= $\frac{area}{length}$,

Diagonal = $\sqrt{l^2 + b^2}$





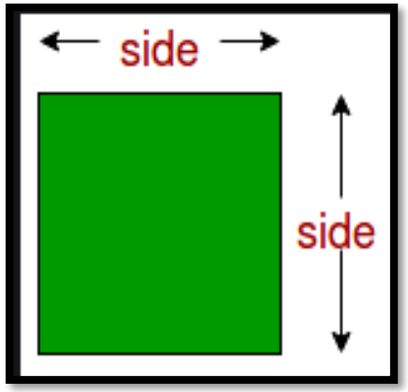
Note: The length and the breadth of a rectangle must be in the same units.

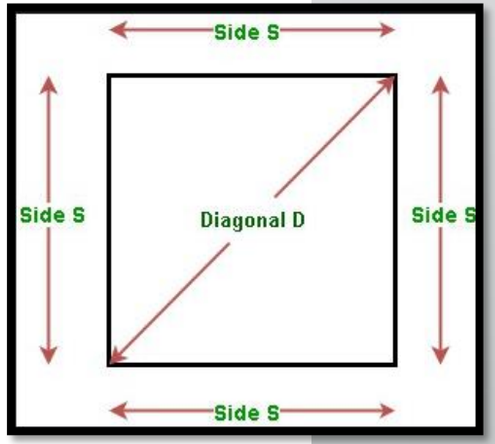
Area of square:

Area of square=side × side

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

Diagonal = $s\sqrt{2}$





Lateral surface area of the cuboid refer to the area of the four walls of it

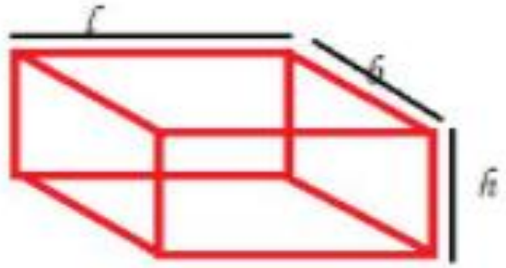
Formula :- 2(l+b) h

*Derivation :- Area of rectangle1 = l*h*

*Area of rectangle2 = b*h*

*Area of rectangle3 = l*h*

*Area of rectangle 4 = b*h*



Total area =2lh+2bh

= 2(l+b) h

Area of four walls of the room: (L.S.A – lateral surface area)

Area of four walls of the room= $l \times h + l \times h + b \times h + b \times h$

$$= 2(l \times h + b \times h)$$

$$= 2((l + b) \times h)$$

EXERCISE:18.2

1)Find the area of the rectangle with the following dimensions:

a) Length $= 120$cm , breadth $= 100$cm

Area of a rectangle $= length \times$ breadth

$$= 120 \times 100$$

$$= 12000 \text{ sq.cm}$$

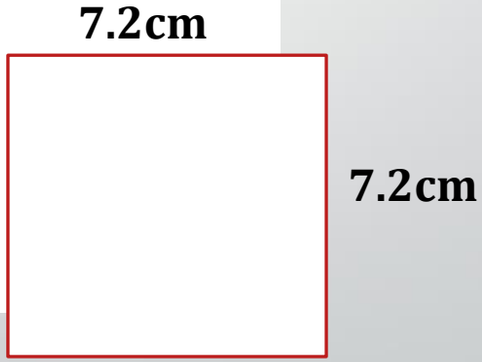
2) Find the area of the square with the following dimensions:

a) Side $= 7.2$cm(in sq cm)

Area of a square $=$ side $\times$ side

$= 7.2 \times 7.2$

$= 51.84$ sq.cm



3)The area of a rectangular plot is 80 acres. Its breadth is 80m. Find its length.

Sol: Area of a rectangular plot $= 80$ acres

Breadth a rectangular plot $= 80$m

Length a rectangular plot $=?$

$1\text{acre} = 4046.856$ sq.m

80 acres $= 80 \times 4046.856$

$= 323748.48$ sq.m

$$\text{Length} = \frac{area}{breadth} = \frac{323748.48}{80}$$

$=4046.856$ m

Length of a rectangular plot $= 4046.856$ m (appr)

Note: Change the answer at the backside of the textbook 4046.856m

5)A wire is in the shape of a rectangle whose length is 45cm and breadth is 25cm. If the same wire is rebent in the shape of a square ,what will be the measure of each side. Also, find which shape encloses more area.

Sol: Wire is bent in the shape of a rectangle

Length of a rectangle = 45cm,

Breadth of a rectangle = 25cm

Perimeter of a rectangle = 2 $(l + b)$

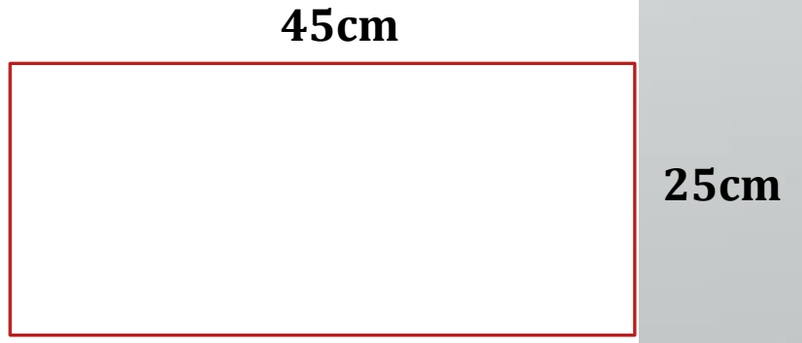
$= 2(45 + 25)$

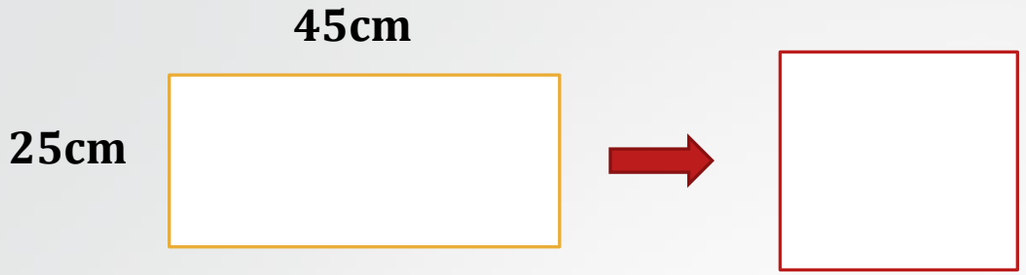
Perimeter of a rectangle = 2 ×70 = 140cm

Area of a rectangle = $l \times b$

$= 45 \times 25$

Area of a rectangle = 1125sq.cm





Same wire rebent into square shape

Perimeter of a rectangle = Perimeter of a square

Perimeter of a rectangle = 140cm

Perimeter of a square = 140 cm

$4 \times side = 140$

Side = 140/4 = 35cm

Area of a square = side × side

$= 35 \times 35$

Area of a square = 1225 sq.cm

1225 sq.cm > 1125sq.cm

∴ Square encloses more area by (1225-1125)=100sq.cm

Homework

EXERCISE:18.2

1)Find the area of the rectangle with the following dimensions:

b)L= 2m35cm , b= 1m10cm

2) Find the area of the square with the following dimensions:

b)Side = 240cm

4) The length and breadth of a rectangle are 0.3m and 12cm respectively. Find the area.

- Solved Ex: 18.1(8^{th} to 10th sum)
- Introduction to Area.
- Solving Exercise : 18.2 (1^{st} to 5^{th} sum)

Using the formulae of Area of rectangle, square and four walls of the room.

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