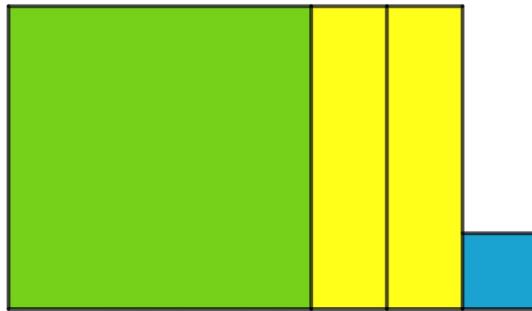


# ONLINE MATHS CLASS - X – 35 ( 13 / 09 / 2021 )

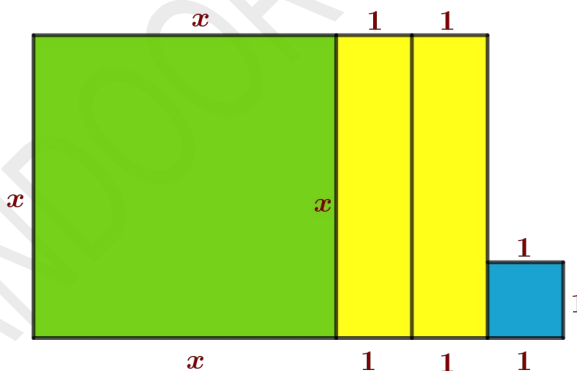
## 4 . SECOND DEGREE EQUATIONS - CLASS - 2

### Activity 1



A green square , two yellow rectangles of the same height and a small blue square are kept together . The width of the yellow rectangles and the side of the blue square are all 1 metre . And the total area of the entire figure is 100 square metres . What is the length of the side of the green square ?

### Answer



Take , the length of the side of the green square =  $x$  m .

Area of the green square =  $x^2$  sq . m .

Length of the smaller side of the yellow rectangle = 1 m .

Length of the larger side of the yellow rectangle =  $x$  m .

Area of the green yellow rectangle =  $x \times 1 = x$  sq . m .

Length of the side of the blue square = 1 m.

Area of the green blue rectangle =  $1^2 = 1$  sq. m.

Total area of the entire figure = 100 sq. m.

$$\implies x^2 + x + x + 1 = 100$$

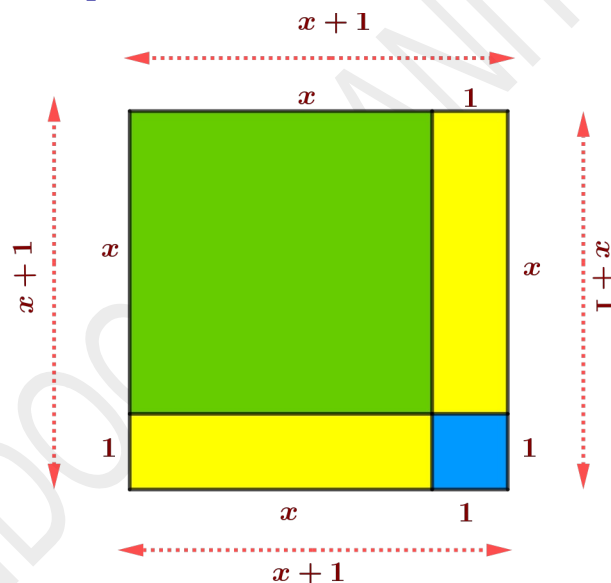
$$x^2 + 2x + 1 = 100$$

$$(x + 1)^2 = 100$$

$$x + 1 = 10$$

$$x = 10 - 1 = 9$$

Length of the side of the green square =  $x = 9$  m.



### Activity 2

One side of a rectangle is 2 metres longer than the other side and its area is 224 square metres. What are the lengths of the sides ?

### Answer

Take , the length of the smaller side =  $x$  m.

Length of the larger side =  $x + 2$  m .

$$\text{Area} = 224 \text{ sq.m} \implies x (x + 2) = 224$$

$$x^2 + 2x = 224$$

$$x^2 + 2x + 1^2 = 224 + 1^2$$

$$(x + 1)^2 = 224 + 1 = 225$$

$$x + 1 = \sqrt{225} = 15$$

$$x + 1 = 15$$

$$x = 15 - 1 = 14$$

Length of the smaller side =  $x = 14$  m.

Length of the longer side =  $x + 2 = 14 + 2 = 16$  m.

### Activity 3

One side of a rectangle is 20 metres longer than the other side and its area is 224 square metres . What are the lengths of the sides ?

### Answer

Take , the length of the smaller side =  $x$  m.

Length of the larger side =  $x + 20$  m.

$$\text{Area} = 224 \text{ sq.m} \implies x(x + 20) = 224$$

$$x^2 + 20x = 224$$

$$x^2 + 20x + 10^2 = 224 + 10^2$$

$$(x + 10)^2 = 224 + 100 = 324$$

$$x + 10 = \sqrt{324} = 18$$

$$x + 10 = 18$$

$$x = 18 - 10 = 8$$

Length of the smaller side =  $x = 8$  m.

Length of the larger side =  $x + 20 = 8 + 20 = 28$  m.

#### Activity 4

A 4 metre wide strip is cut off from a square . The area of the remaining rectangle is 60 square metres . What is the length of a side of the square ?

#### Answer

Take , length of the side of the square =  $x$  m.

Length of the longer side of the remaining rectangle =  $x$  m.

Length of the shorter side of the remaining rectangle =  $x - 4$  m.

Area of the remaining rectangle = 60 sq. m .

$$\Rightarrow x(x - 4) = 60$$

$$x^2 - 4x = 60$$

$$x^2 - 4x + 2^2 = 60 + 2^2$$

$$(x - 2)^2 = 60 + 4 = 64$$

$$x - 2 = \sqrt{64} = 8$$

$$x - 2 = 8$$

$$x = 8 + 2 = 10$$

Length of the side of the square =  $x = 10$  m.

#### NOTE :

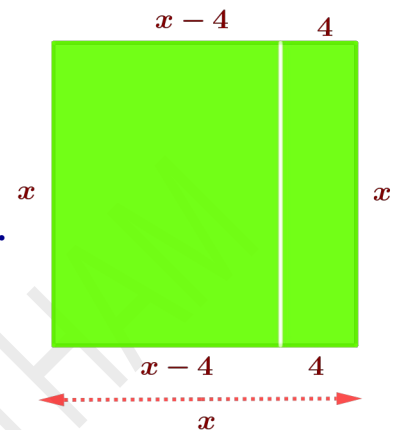
$$x^2 + 2x + 1^2 = (x + 1)^2$$

$$x^2 + 20x + 10^2 = (x + 10)^2$$

$$x^2 + 6x + 3^2 = (x + 3)^2$$

$$x^2 - 8x + 4^2 = (x - 4)^2$$

$$x^2 - 40x + 20^2 = (x - 20)^2$$

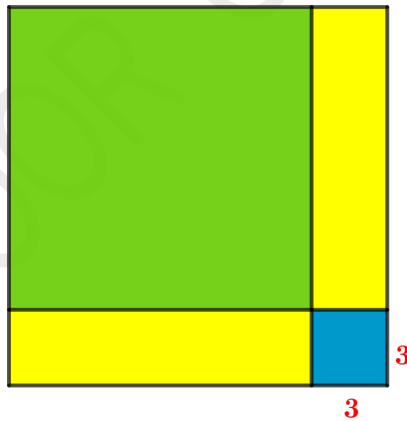


# ONLINE MATHS CLASS - X – 35 ( 13 / 09 / 2021 )

## 4 . SECOND DEGREE EQUATIONS - CLASS - 2 -WORKSHEET

- 1 . a) What number is added to  $x^2 + 6x$  to get a perfect square ?
- b) The sum of the square of a natural number and six times of that number is 315 .  
What is the number ?
2. a) What number is added to  $x^2 - 10x$  to get a perfect square ?
- b) 10 times a natural numbers is subtracted from the square of that number is 231 .  
What is the number ?
3. One side of a rectangle is 4 centimetres longer than the other side and its area is 896 square centimetres . What are the lengths of the sides ?

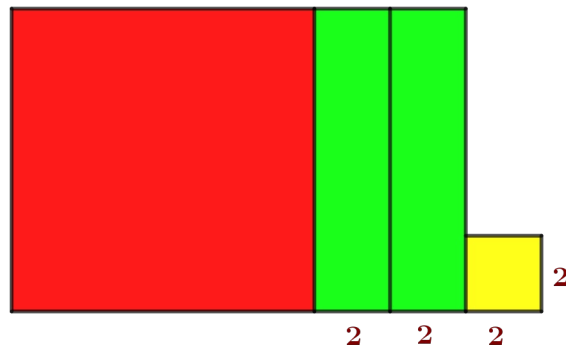
4.



A green square , two yellow rectangles and a small blue square are kept together . The Length of the longer sides of the yellow rectangles and the side of the green square are equal . The length of the shorter sides of the yellow rectangles and the side of the blue square are all 3 metre . And the total area of the entire figure is 225 square metres .

- a) What is the area of the blue square ?
- b) What is the length of the side of the green square ?

5.



A red square , two green rectangles of the same height and a small yellow square are kept together .The length of the shorter sides of the yellow rectangles and the side of the yellow square are all 2 metres . And the total area of the entire figure is 196 square metres .

- What is the area of the yellow square ?
- What is the length of the side of the red square ?