

QUADRATIC EQUATIONS

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10th Maths - Chapter 4

This is Problem-2.1 from Exercise 4.1

1. Represent the following situations in the form of quadratic equations :
(i) The area of a rectangular plot is 528 m^2 . The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot

Solution: :

Required quadratic equation is :

$$2x^2 + x - 528 = 0 \quad (1)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad (2)$$

$$x = \frac{-1 \pm \sqrt{1^2 - (4)(2)(-528)}}{(2)(2)} \quad (3)$$

$$x = \frac{-1 \pm \sqrt{1 + 4224}}{4} \quad (4)$$

$$x = \frac{-1 \pm 65}{4} \quad (5)$$

$$x_1 = \frac{64}{4} \quad (6)$$

$$x_2 = \frac{-65}{4} \quad (7)$$

$$x_1 = 16x_2 = -16.25 \quad (8)$$

since breadth cannot be negative, breadth=16m Hence, Length of plot is $2x+1=2\times 16+1=33\text{m}$