

Quadratic Equation

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10th Maths - Chapter 4

This is Problem-2 from Exercise 4.2

1. John and Jivanti together have 45 marbles. Both of them lost 5 marbles each, and the product of the number of marbles they now have is 124. We would like to find out how many marbles they have to start with.

Solution:

Given Data:

$$x^2 - 45x + 324 = 0$$

This can also be written as:

(1)

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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad (3)$$

(4)

$$x = \frac{45 \pm \sqrt{-45^2 - 4 \times 1 \times 324}}{2 \times 1} \quad (5)$$

(6)

$$x = \frac{45 + \sqrt{2025 - 1296}}{2} \quad (7)$$

(8)

$$x = \frac{45 + \sqrt{729}}{2} \quad (9)$$

$$1stcondition \quad (10)$$

(11)

$$x = \frac{45 + 27}{2} \quad (12)$$

(13)

$$x = \frac{72}{2} \quad (14)$$

$$x = 36 \quad (15)$$

$$2ndCondition \quad (16)$$

(17)

$$x = \frac{45 - 27}{2} \quad (18)$$

(19)

$$x = \frac{18}{2} \quad (20)$$

(21)

$$x = 9 \quad (22)$$

(23)

$$Hencethererootsarex = 36andx = 9 \quad (24)$$

(25)