Qudratic Equation

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August 2, 2023

10^{th} 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: $\left(x^2 - 45x + 324 = 0\right)$

This can also be written as:
$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$
$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{45 \pm \sqrt{-45^2-4\times1\times324}}{2\times1}$

$x = \frac{45+\sqrt{2025-1296}}{2}$

$x = \frac{45+\sqrt{729}}{2}$
1st condition

$x = \frac{45+27}{2}$

$x = \frac{72}{2}$
x=36
2nd Condition

$x = \frac{45-27}{2}$

$x = \frac{18}{2}$

x=9

Hence there roots are x=36 and x=9