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Solving Equations: Unraveling the Unknown**

Introduction

An equation is a mathematical statement that two expressions are equal. Solving an equation involves finding the value(s) of the variable(s) that make the equation true. Understanding the process of solving equations is crucial for solving problems in various fields, including mathematics, science, and engineering.

What is Meant by Solving an Equation?

Solving an equation means finding the value of the variable(s) that satisfy the equation. For example, if we have the equation $x + 5 = 10$, solving it means finding the value of x that makes this equation true.

Types of Equations

- **1-Step Equations:** These equations can be solved in one step using basic arithmetic operations like addition or subtraction.
- **Multi-Step Equations:** These equations require multiple steps to solve, often involving operations such as multiplication, division, and combining like terms.

Rule for Solving Equations

The basic rule for solving equations is to perform the same operation on both sides of the equation, keeping the equation balanced. This means that if we add or

subtract a number on one side, we must also do so on the other side.

Steps for Solving Equations

1. **Isolate the variable:** Perform operations on both sides to move the variable term to one side and the constant term to the other side.
2. **Solve for the variable:** Apply the inverse operation (e.g., division if multiplying, subtraction if adding) to both sides to isolate the variable.

Solution Formula

Some equations have a specific formula that can be used to find the solution. For instance, the solution formula for the equation $ax + b = c$ is $x = (c - b)/a$.

Explaining an Equation

To explain an equation, we can break it down into its individual parts and discuss the relationship between the variables and the constants. We can also use tables or graphs to visualize the solution.

Importance of Solving Equations

Solving equations is a fundamental skill in mathematics as it:

- Allows us to find unknown values
- Helps us solve problems
- Enables us to make predictions
- Forms the basis for more advanced mathematical concepts

Solving Specific Equations

- $3n - 9) - 2n + 4) = 6n$: $n = 1$
- $5(3b + 3) - 2b(2 + 5) + 2b(3 - 2)$: $b = 1/2$
- $7y = 4$, $9y = 13$, $4y$: $y = 4/7$
- $9x - 1 = 2$: $x = 1/3$

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