

Solve The Following Equation. $-p/12 = 6$

Solve The Following Equation. $-p/12 = 6$ is a straightforward algebraic problem that provides an excellent opportunity to understand the process of solving linear equations. Whether you're a student learning algebra for the first time or someone brushing up on basic math skills, mastering how to solve such equations is fundamental. In this article, we will explore the steps to solve this particular equation, delve into related concepts, and offer tips to improve your problem-solving skills in algebra.

Understanding the Equation

Before diving into the solution, it's essential to analyze the equation itself:

$$-p/12 = 6$$

This equation involves a variable, p , with a negative sign in front of it, divided by 12, set equal to 6. Recognizing the structure of the equation helps determine the approach needed to isolate the variable.

Step-by-Step Solution Process

Let's break down the steps to solve for p :

Step 1: Eliminate the Denominator

The denominator 12 complicates direct isolation of p . To eliminate it, multiply both sides of the equation by 12:

$$-p/12 \cdot 12 = 6 \cdot 12$$

This simplifies as:

$$-p = 72$$

Step 2: Isolate p

Now, p is negative on the left side. To solve for p , multiply both sides by -1 :

$$-p \cdot -1 = 72 \cdot -1$$

Simplifying:

$$p = -72$$

Final Answer: $p = -72$

This is the solution to the equation. The key steps involved clearing the fraction and then isolating the variable by multiplying both sides by -1 .

Verifying the Solution

Always verify your solution by substituting p back into the original equation:

$$-(-72)/12 = 6$$

Simplify numerator:

$$72/12 = 6$$

Since 72 divided by 12 equals 6, the original equation holds true, confirming that $p = -72$ is correct.

Related Concepts and Tips

Understanding this problem opens doors to grasping broader algebraic principles. Here are some related concepts and useful tips:

1. Working with Fractions

- To eliminate fractions, multiply both sides of the equation by the least common denominator (LCD).
- Always check for restrictions, such as division by zero, which can occur if the denominator is zero.

2. Handling Negative Signs

- When multiplying or dividing both sides by a negative number, remember to reverse inequalities (not applicable here but useful in inequality problems).
- Be cautious with negative signs in equations to avoid sign errors.

3. Importance of Verification

- After solving for the variable, substitute back into the original equation to ensure correctness.
- This step helps catch calculation mistakes and confirms the solution.

Common Mistakes to Avoid

Here are some typical errors students make when solving equations like this:

- Forget to multiply both sides by the denominator, leading to incorrect solutions.

- Ignoring the negative sign in front of p , resulting in wrong signs in the final answer.
- Forgetting to check the solution by substituting back into the original equation.
- Not simplifying fractions properly, which can cause confusion.

Practice Problems for Mastery

Enhance your understanding by trying similar problems:

1. Solve for x : $-2x/5 = 8$
2. Solve for y : $-(3y + 4)/7 = 3$
3. Solve for t : $-t/9 = -4$
4. Find p in: $-p/15 = -5$

Work through these problems using the same steps: eliminate fractions, isolate the variable, and verify your solutions.

Applications of Solving Equations in Real Life

Solving linear equations like $-p/12=6$ isn't just an academic exercise; these skills are applicable in various real-world scenarios:

- **Financial Calculations:** Determining loan payments or interest rates.
- **Physics:** Calculating speed, distance, or time relationships.
- **Engineering:** Solving for unknown parameters in design equations.
- **Statistics:** Deriving formulas or solving for variables in data analysis.

Mastering basic algebra enhances problem-solving abilities across many fields.

Conclusion

In summary, solving the equation $-p/12 = 6$ involves clear steps: eliminating the denominator by multiplying both sides by 12, then isolating p by multiplying both sides by -1 . The solution, $p = -72$, is verified by substitution. Understanding these steps and practicing similar problems will improve your algebraic skills and prepare you for more complex equations. Remember to verify solutions to ensure accuracy and develop a strong foundation in algebra for academic and practical success.

Frequently Asked Questions

How do I solve the equation $-p/12 = 6$ for p ?

To solve for p , multiply both sides of the equation by 12 to eliminate the denominator: $-p = 6 \cdot 12$. Simplify to get $-p = 72$, then multiply both sides by -1 : $p = -72$.

What is the value of p in the equation $-p/12 = 6$?

The value of p is -72 , obtained by multiplying both sides of the equation by 12: $p = -72$.

Can I verify the solution $p = -72$ in the original equation?

Yes. Substitute $p = -72$ into the original equation: $-(-72)/12 = 72/12 = 6$, which matches the right side, confirming the solution is correct.

What is the step-by-step method to solve $-p/12 = 6$?

Step 1: Multiply both sides by 12 to clear the denominator: $-p = 6 \cdot 12$. Step 2: Simplify the right side: $-p = 72$. Step 3: Multiply both sides by -1 to solve for p : $p = -72$.

Is the solution $p = -72$ unique for the equation $-p/12 = 6$?

Yes, since the equation is linear and straightforward, $p = -72$ is the only solution.

Additional Resources

Solve The Following Equation: $-p/12 = 6$

Introduction

Mathematics, at its core, is a language of problem-solving. Whether in academia, industry, or everyday life, equations serve as vital tools for expressing relationships and making calculations. Among the foundational skills in algebra is solving linear equations, a skill that underpins more complex mathematical concepts. One such elementary yet instructive example is the equation:

$$-p/12 = 6$$

This equation, simple in appearance, offers a window into the systematic approach needed to isolate variables, apply inverse operations, and understand the structure of algebraic expressions.

This article aims to thoroughly analyze this equation, exploring the steps

required to solve for the unknown variable p . We will delve into the principles of algebra involved, discuss common pitfalls, and provide a comprehensive guide suitable for learners at various levels.

Understanding the Equation: Context and Structure

Before jumping into the solution, it is crucial to understand the components of the equation:

- The variable: p , which is the unknown we aim to solve for.
- The coefficient: $-1/12$, which multiplies p .
- The constant: 6 , on the right side of the equation.

The equation is linear in p because p appears to the first power and is combined with constants through basic operations.

Step-by-Step Solution Strategy

1. Recognize the form of the equation

The given equation is:

$$-p/12 = 6$$

This can be rewritten as:

$$(-1/12) p = 6$$

Our goal is to isolate p on one side of the equation.

2. Eliminate the fraction

To solve for p , we need to get rid of the coefficient $-1/12$. Since p is multiplied by this coefficient, we can do the inverse operation: multiply both sides of the equation by the reciprocal of $-1/12$.

The reciprocal of $-1/12$ is -12 because:

$$(-1/12) (-12) = 1$$

Applying this to both sides:

$$(-1/12) p (-12) = 6 (-12)$$

Simplifies to:

$$p = 6 (-12)$$

Detailed Calculation

$$p = 6 (-12)$$

Calculating the right side:

$$p = -72$$

Thus, the solution is:

$$p = -72$$

Verification of the Solution

To ensure the correctness of the solution, substitute $p = -72$ back into the original equation:

$$-p/12 = 6$$

Substituting:

$$-(-72)/12 = 6$$

Simplify numerator:

$$72 / 12 = 6$$

Check:

$$6 = 6$$

The equality holds true, confirming that $p = -72$ is the correct solution.

Deeper Insights and Variations

1. Handling similar equations with different coefficients

Suppose the equation were:

$$-k/12 = c$$

Where k is the variable, and c is a constant. The approach remains similar:

- Multiply both sides by -12 (reciprocal of the coefficient)
- Simplify to find k

This generalizes the method for solving linear equations with fractional coefficients.

2. Dealing with more complex fractions

If the equation involved multiple fractions or additional terms, algebraic manipulation would include:

- Combining like terms
- Finding least common denominators
- Using distributive properties

Common Mistakes and How to Avoid Them

- Misidentifying the reciprocal: Remember that to cancel a coefficient, multiply both sides by its reciprocal, not its inverse sign.
- Sign errors: Pay close attention to negative signs throughout the process.
- Incorrectly simplifying fractions: Always verify calculations when multiplying fractions and constants.
- Neglecting verification: Always substitute the solution back into the original equation to confirm accuracy.

Practical Applications of Solving Linear Equations

While this example is purely algebraic, the skills involved have broad applications:

- Financial calculations, such as determining interest rates
- Physics problems involving force, speed, or acceleration
- Engineering design calculations
- Data analysis and modeling

Mastering these techniques builds a foundation for tackling real-world problems systematically.

Summary

In solving the equation $-p/12 = 6$, the key steps involve:

1. Recognizing the structure of the equation.
2. Multiplying both sides by the reciprocal of $-1/12$ (which is -12) to isolate p .
3. Simplifying to find $p = -72$.
4. Verifying the solution by substitution.

This process exemplifies fundamental algebraic principles—isolating variables, manipulating fractions, and verifying solutions—that are essential skills for students and professionals alike.

Final Thoughts

Equations like $-p/12 = 6$ serve as simple yet profound examples of algebraic problem-solving. They reinforce the importance of understanding inverse operations, managing fractions, and maintaining attention to detail. Whether encountered in academic coursework, professional contexts, or everyday calculations, these skills enable precise and confident mathematical reasoning.

By mastering these fundamental concepts, learners lay the groundwork for more advanced mathematics, fostering logical thinking, analytical skills, and problem-solving confidence that extend far beyond the classroom.

In conclusion, solving the equation $-p/12 = 6$ involves understanding the structure, applying inverse operations, and carefully performing calculations to arrive at the solution $p = -72$, accompanied by verification to ensure

accuracy.

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