Solve For X.3x - 4 = 2x - 10O X = 6OX= -6OX= 14O X=-14Please Help Will Give You Brainly

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Introduction

Solving for the variable \(x \) in algebraic equations is a fundamental skill in mathematics, enabling students and learners to understand relationships between quantities, analyze problems, and develop logical reasoning. The phrase "Solve For X.3x - 4 = 2x - 10O X = 6OX= -6OX= 14O X=-14Please Help Will Give You Brainly" appears to be a mixture of algebraic expressions and possibly some typographical errors or shorthand notes. Despite its confusing appearance, the core objective is clear: to find the value of \(x \) that satisfies the given equations.

This article will guide you through the process of solving linear equations similar to the one presented, clarify the meaning behind the symbols and expressions, and offer step-by-step instructions to arrive at the correct solution. We will also explain common pitfalls, strategies for solving equations efficiently, and how to interpret multiple solutions or inconsistent equations.

Understanding the Equation

Deciphering the Given Expression

The initial expression appears to be:

> Solve For X.3x - 4 = 2x - 10O X = 6OX= -6OX= 14O X=-14Please Help Will Give You Brainly

Breaking this down:

- "3x - 4 = 2x - 10": Seems like a standard linear equation.
- The sequences like "O X = 60", "X = -6O", "X=14O", and "X=-14" might be shorthand or typos for solutions or related expressions.

Given the context, the most relevant part appears to be solving the equation:

\[
3x - 4 = 2x - 10

\]

and considering the possible solutions \(x = 14 \) and \(x = -14 \). The mention of "Will Give You Brainly" suggests the user wants help in solving these equations, possibly for educational purposes.

Clarifying the Equation

Let's focus on solving the core algebraic equation:

\[
3x - 4 = 2x - 10
\]

This is a straightforward linear equation, and solving it involves isolating \(x \) on one side.

Step-by-Step Solution of the Equation

Step 1: Write Down the Equation

\[
3x - 4 = 2x - 10
\]

Step 2: Subtract \(2x \) from both sides to gather \(x \) terms on one side

\[
3x - 2x - 4 = 2x - 2x - 10
\]
\[
x - 4 = -10
\]

Step 3: Add 4 to both sides to solve for \(x \)

\[
x - 4 + 4 = -10 + 4
\]
\[
x = -6
\]

Solution:

\[
x = -6
\]

This is the value of x that satisfies the original equation.

Interpreting Multiple Solutions and Other Expressions

Considering the Other Possible Solutions

The other expressions:

- $x = 14$
- $x = -14$

might be solutions to different equations or different parts of the problem. To verify, substitute these into the original or related equations:

Test $x = 14$:

$$
3(14) - 4 = 42 - 4 = 38
$$
$$
2(14) - 10 = 28 - 10 = 18
$$
Since $38 \neq 18$, $x=14$ does not satisfy the original equation.

Test $x = -14$:

$$
3(-14) - 4 = -42 - 4 = -46
$$
$$
2(-14) - 10 = -28 - 10 = -38
$$
Since $-46 \neq -38$, $x=-14$ also does not satisfy the original equation.

Understanding the Multiple Solutions

If other equations or contexts are involved, solutions can vary. For example, equations like quadratic equations or systems of equations can have multiple solutions, but linear equations like the one above generally have a single solution unless they are identities or contradictions.

Common Mistakes and How to Avoid Them

1. Forgetting to Perform the Same Operation on Both Sides

Always remember that any operation (addition, subtraction, multiplication, division) performed on one side must be performed on the other side to maintain equality.

2. Losing Track of Signs

Be cautious with negative signs, especially when moving terms across the equality sign.

3. Not Simplifying Properly

Combine like terms carefully to avoid errors.

4. Overlooking Special Cases

- Identity Equations: Equations true for all x (e.g., $0=0$)
- Contradictions: Equations with no solution (e.g., $0=5$)

Additional Types of Equations and Solutions

Linear Equations

- Typically have one solution.
- Example: $3x - 4= 2x - 10$ (solved as $x= -6$)

Quadratic Equations

- Can have zero, one, or two solutions.
- Example: $x^2 - 5x + 6 = 0$ (solutions: $x=2$ or $x=3$)

Systems of Equations

- Multiple equations with multiple variables.
- Solutions are the points where all equations intersect.

Practice Problems

Problem 1:

Solve for x:

$$
5x + 3 = 2x + 12
$$

Solution:

\[

$$
5x - 2x = 12 - 3
$$
$$
3x = 9
$$
$$
x=3
$$

Problem 2:

Solve for x:

$$
2(x - 4) = 3x + 2
$$

Solution:

$$
2x - 8 = 3x + 2
$$
$$
2x - 3x = 2 + 8
$$
$$
- x = 10
$$
$$
x= -10
$$

Tips for Effective Solving

- Write down each step clearly.
- Check your solutions by substituting back into the original equation.
- Keep track of signs and coefficients.
- Practice with different types of equations to build confidence.

Conclusion

Solving for x is a fundamental aspect of algebra that requires understanding the properties of equality and the correct application of algebraic operations. In the specific example $3x - 4 = 2x - 10$, the solution $x= -6$ is straightforward once the steps are followed carefully. When encountering more complex expressions or multiple solutions, it's essential to analyze each carefully, verify solutions, and understand the nature of the equations involved.

Remember, practice is key to mastering algebra. By working through various problems, you develop the skills necessary to solve equations efficiently and accurately. If you find yourself stuck, reviewing similar problems, consulting resources like Brainly, or seeking help from teachers or tutors can be very beneficial.

Additional Resources

- Algebra textbooks and workbooks
- Online algebra calculators and solvers
- Educational platforms like Khan Academy, Brainly, and Coursera
- Math tutors and study groups

Keep practicing, stay curious, and you'll become proficient at solving for \(x \) and tackling more advanced math challenges!

Frequently Asked Questions

How do I solve the equation 3x - 4 = 2x - 10?

To solve 3x - 4 = 2x - 10, subtract 2x from both sides to get x - 4 = -10, then add 4 to both sides to find x = -6.

What is the value of x in 3x - 4 = 2x - 10?

The solution is x = -6.

Why does solving for x in 3x - 4 = 2x - 10 result in x = -6?

Because subtracting 2x from both sides yields x - 4 = -10, and adding 4 gives x = -6.

Are there multiple solutions for the equation 3x - 4 = 2x - 10?

No, this is a linear equation with a single solution: x = -6.

Is x = 6, -6, or 14 the correct solution for the equation 3x - 4 = 2x - 10?

The correct solution is x = -6.

How can I verify that x = -6 is the correct answer?

Substitute x = -6 into the original equation: 3(-6) - 4 = 2(-6) - 10; check if both sides are equal.

What steps should I follow to solve similar equations like 3x - 4 = 2x - 10?

First, isolate the variable by moving all x terms to one side, then solve for x by simplifying the equation.

Why does the equation 3x - 4 = 2x - 10 have only one solution?

Because it's a linear equation with degree one, which typically yields a single unique solution.

Can you explain how to solve for x in the equation 3x - 4 = 2x - 10 step-by-step?

Yes. First, subtract 2x from both sides: 3x - 2x - 4 = -10. Simplify to x - 4 = -10. Then, add 4 to both sides: x = -10 + 4, so x = -6.

Additional Resources

Solve For X.3x - 4 = 2x - 100 X = 6OX= -6OX= 14O X=-14: An Analytical Deep Dive into Algebraic Problem Solving

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Introduction

In the world of mathematics, algebra serves as a foundational pillar, empowering learners and professionals alike to decipher complex relationships through symbols and equations. Among the core skills in algebra, solving for an unknown variable—commonly represented as X—is fundamental. The phrase "Solve For X.3x - 4 = 2x - 100 X = 6OX= -6OX= 14O X=-14" encapsulates a typical problem-solving scenario, albeit presented with some typographical irregularities that merit clarification. This article aims to dissect this problem comprehensively, exploring the principles, methods, and implications of solving such equations. Through detailed explanations, illustrative examples, and analytical insights, we will deepen the understanding of algebraic solutions and their significance.

Clarifying the Problem Statement

The initial step involves interpreting the given problem accurately. The phrase appears to contain typographical errors, but a logical reconstruction suggests the intended problem involves solving an algebraic equation of the form:

$3x - 4 = 2x - 10$

Followed by a series of solutions or potential solutions:

$X = 6$, $X = -6$, $X = 14$, $X = -14$

It seems that the original question might be asking:

- To solve the equation $3x - 4 = 2x - 10$ for x.
- To verify or analyze various solutions: $x = 6, -6, 14, -14$.
- To confirm which, if any, satisfy the equation.

Given this, the article will focus on solving the primary equation, analyzing the solutions, and understanding how these particular values relate to the equation.

Understanding the Equation: Fundamentals and Approach

What is an Algebraic Equation?

An algebraic equation is a mathematical statement that asserts the equality of two expressions, often involving variables and constants. Solving the equation involves finding the value(s) of the variable(s) that make the statement true.

The Standard Approach to Solving Linear Equations

The equation $3x - 4 = 2x - 10$ is a linear equation in one variable. The general steps to solve such equations include:

1. Isolate the variable on one side of the equation.
2. Simplify both sides as needed.
3. Solve for x through inverse operations.
4. Verify the solution by substituting back into the original equation.

Step-by-Step Solution of $3x - 4 = 2x - 10$

Step 1: Bring like terms together

Subtract 2x from both sides:

$3x - 2x - 4 = -10$

Simplifies to:

x - 4 = -10

Step 2: Isolate x

Add 4 to both sides:

x = -10 + 4

x = -6

Result: The solution to the equation is x = -6.

Verification of the Solution

To ensure the correctness, substitute x = -6 back into the original equation:

Left side: 3(-6) - 4 = -18 - 4 = -22

Right side: 2(-6) - 10 = -12 - 10 = -22

Since both sides equal -22, x = -6 is a valid solution.

Analyzing the Given Solutions

The problem statement also lists potential solutions:

- x = 6
- x = -6
- x = 14
- x = -14

Let's verify which of these satisfy the original equation.

For x = 6:

Left: 3(6) - 4 = 18 - 4 = 14

Right: 2(6) - 10 = 12 - 10 = 2

Since 14 ≠ 2, x=6 is not a solution.

For x = -6:

Left: 3(-6) - 4 = -18 - 4 = -22

Right: 2(-6) - 10 = -12 - 10 = -22

Yes, this matches, confirming x = -6 as a solution.

For x = 14:

Left: 3(14) - 4 = 42 - 4 = 38

Right: 2(14) - 10 = 28 - 10 = 18

Not equal, so x=14 is not a solution.

For x = -14:

Left: 3(-14) - 4 = -42 - 4 = -46

Right: 2(-14) - 10 = -28 - 10 = -38

Not equal, so x=-14 is not a solution.

Conclusion: The only valid solution from the list is x = -6.

Broader Context and Implications

Importance of Verifying Solutions

Verifying potential solutions by substitution is a critical step in algebraic problem-solving. It ensures that solutions are not only algebraically derived but also satisfy the original equation, avoiding errors stemming from algebraic manipulation mistakes.

Multiple Solutions and Their Significance

In linear equations such as 3x - 4 = 2x - 10, there is typically only one solution unless the equation simplifies to an identity or contradiction. The verification process confirms this.

In more complex equations (quadratic, exponential, etc.), multiple solutions may exist, and the process of solving involves considering all such solutions.

Advanced Topics: Extending the Concept

While the current problem involves a straightforward linear equation, the principles extend to more advanced algebraic scenarios:

1. Quadratic Equations: Equations of the form ax^2 + bx + c = 0, which may

have two solutions, one solution, or none.

2. Systems of Equations: Multiple equations solved simultaneously to find common solutions.

3. Inequalities: Equations involving inequalities (>, <, ≥, ≤) that require different solution techniques.

4. Functions and Graphs: Visualizing solutions through plotting functions and understanding their intersections.

Educational and Practical Significance

Understanding how to solve for X in algebraic equations is essential not only in academic contexts but also in real-world applications such as finance, engineering, computer science, and data analysis. For example, calculating break-even points, optimizing functions, or analyzing data trends often involves solving equations similar to the one discussed.

Furthermore, mastering these skills enhances critical thinking, logical reasoning, and problem-solving capabilities—traits highly valued in various career paths.

Conclusion

The exploration of the equation $3x - 4 = 2x - 10$ demonstrates the core principles of algebraic problem-solving: simplifying expressions, isolating variables, and verifying solutions. The confirmed solution $x = -6$ exemplifies the systematic approach essential for accurate mathematical reasoning. Analyzing the potential solutions further underscores the importance of verification, especially when dealing with multiple candidate answers.

While the initial problem statement contained some typographical irregularities, the process of clarifying, solving, and verifying has illuminated the fundamental techniques that underpin algebra. These methods are vital tools for students, educators, and professionals alike, empowering them to navigate complex mathematical landscapes with confidence.

As algebra continues to evolve and integrate with technological advancements, foundational skills like solving for X remain central. They serve as gateways to understanding more advanced mathematical concepts and applying them effectively across disciplines.

References and Further Reading

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- Pauls, R. (2012). Algebra and Trigonometry. Pearson.

By developing a thorough understanding of solving equations like the one presented, learners equip themselves with essential tools for academic success and practical problem-solving in diverse fields.

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