What Is The First Step To 11-3x=44 ?

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When faced with a linear equation like 11 - 3x = 44, understanding the initial step to solve for the variable is crucial. This fundamental question often arises among students learning algebra, and mastering it provides a solid foundation for tackling more complex equations. In this article, we will explore the first step to solve the equation 11 - 3x = 44 in a detailed, step-by-step manner. We will also discuss related concepts, common mistakes, and tips to ensure a clear understanding of the process.

Understanding the Equation: 11 - 3x = 44

Before diving into the solution, it’s important to analyze what the equation represents.

- Equation Components:
- 11: A constant term.
- -3x: A term involving the variable x multiplied by -3.
- = 44: The equation states that the expression on the left equals 44.

- Goal:
- Isolate x to find its value.

Why Is the First Step Important?

The first step in solving linear equations like 11 - 3x = 44 sets the stage for straightforward algebraic manipulation. Properly identifying and executing this step ensures:

- Correct simplification of the equation.
- Avoidance of common mistakes such as misapplying operations.
- A clear pathway to the solution.

The First Step To Solve 11 - 3x = 44

The main goal in solving for x is to isolate it on one side of the equation. To do this, we need to eliminate the constant term 11 from the left side.

The First Step: Subtract 11 From Both Sides

Why subtract 11?

Because subtraction is the inverse of addition, removing 11 from the left side simplifies the equation and brings -3x closer to being isolated.

Mathematically:

$$
11 - 3x = 44
$$

Subtract 11 from both sides:

$$
(11 - 3x) - 11 = 44 - 11
$$

Simplifies to:

$$
-3x = 33
$$

Key Points:

- Always perform the same operation on both sides to maintain equality.
- Subtracting 11 cancels out the constant on the left side.

Step-by-Step Guide to Solving the Equation

Now that we have performed the first step, let's proceed systematically:

Step 1: Subtract 11 from both sides

- Equation transforms from 11 - 3x = 44 to -3x = 33.

Step 2: Divide both sides by -3

- To isolate x, divide both sides by -3:

$$
\frac{-3x}{-3} = \frac{33}{-3}
$$

- Simplifies to:

$$
x = -11
$$

Summary of the Solution Steps

Step	Operation	Resulting Equation	Explanation
1	Subtract 11 from both sides	$11 - 3x = 44 \rightarrow -3x = 33$	Eliminates the constant term from the left
2	Divide both sides by -3	$-3x = 33 \rightarrow x = -11$	Isolates the variable x

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Additional Tips for Solving Linear Equations

To ensure accuracy and efficiency, consider the following tips:

- Always perform the same operation on both sides. This maintains the balance of the equation.
- Identify the inverse operation. If a term is added, subtract it; if multiplied, divide.
- Simplify step-by-step. Avoid rushing through the process to prevent mistakes.
- Check your solution. Substitute x = -11 back into the original equation:

$$
11 - 3(-11) = 11 + 33 = 44
$$

which confirms the solution is correct.

Common Mistakes to Avoid

While solving equations like $11 - 3x = 44$, learners often encounter these errors:

- Adding instead of subtracting: Remember to subtract 11, not add.
- Dividing before isolating the variable: Always isolate the variable first before dividing.
- Forgetting to perform the operation on both sides: Skipping this step can lead to incorrect results.

- Misinterpreting negative signs: Be attentive to negative coefficients and constants.

Understanding the Significance of the First Step

The initial step—subtracting 11—is foundational because:

- It simplifies the equation, making subsequent steps straightforward.
- It prevents the propagation of errors into later steps.
- It clarifies the structure of the equation, highlighting the coefficient of x.

Mastering this early step builds confidence and paves the way for solving more complex equations, including those involving variables on both sides or higher degrees.

Practice Problems to Reinforce the Concept

To solidify your understanding of the first step in solving linear equations, try these practice problems:

1. Solve for x: 7 + 4x = 25
- First step: Subtract 7 from both sides.
2. Solve for x: -5 + 2x = 3
- First step: Add 5 to both sides.
3. Solve for x: 3x - 9 = 0
- First step: Add 9 to both sides.
4. Solve for x: 12 - 2x = 4
- First step: Subtract 12 from both sides.

By consistently applying the principle of performing inverse operations to isolate the variable, you will become proficient in solving linear equations.

Conclusion

What Is The First Step To 11-3x=44 ? The answer is to subtract 11 from both sides of the equation, resulting in -3x = 33. This initial step simplifies the equation, making it easier to isolate x through division. Remember, the key to solving equations efficiently is to perform inverse operations systematically and on both sides, maintaining the equality throughout the process. With practice and careful attention to detail, solving linear equations like 11 - 3x = 44 becomes a straightforward and manageable task. Keep practicing with different

equations to strengthen your algebra skills and gain confidence in solving equations effectively.

Frequently Asked Questions

What is the first step to solve the equation 11 - 3x = 44?

The first step is to isolate the term with the variable by subtracting 11 from both sides.

How do I start solving 11 - 3x = 44?

Begin by subtracting 11 from both sides to get -3x alone on one side.

What operation should I perform first when solving 11 - 3x = 44?

Subtract 11 from both sides to simplify the equation.

Is it necessary to move constants first in the equation 11 - 3x = 44?

Yes, removing constants from the side with the variable helps to solve for x more easily.

After subtracting 11 from both sides, what comes next in solving 11 - 3x = 44?

Next, divide both sides by -3 to solve for x.

Can I directly solve for x without isolating the variable first?

No, isolating the variable first by subtracting constants is the proper first step.

What is the importance of the first step in solving 11 - 3x = 44?

It simplifies the equation, making it easier to solve for the variable accurately.

Should I perform the same operation on both sides when solving for x?

Yes, always perform the same operation on both sides to maintain equality.

What is the goal of the first step in solving an algebraic equation like 11 - 3x = 44?

The goal is to isolate the variable term so you can solve for x directly.

How do I verify my solution after solving for x in 11 - 3x = 44?

Substitute your value of x back into the original equation to check if both sides are equal.

Additional Resources

What Is The First Step To 11 - 3x = 44?
When approaching a linear equation like 11 - 3x = 44, understanding the initial step is crucial for solving the problem efficiently and accurately. The phrase "What is the first step to 11 - 3x = 44?" often prompts students and learners to consider the foundational actions needed to isolate the variable and find its value. In this guide, we will explore the logical progression, strategies, and common pitfalls involved in solving such equations, emphasizing the importance of the first move in the process.

Understanding the Equation

Before diving into the solution, it’s essential to comprehend what the equation represents. The equation 11 - 3x = 44 involves:

- A constant term (11)
- A variable term (-3x)
- An equality sign, indicating the two sides are equivalent

The ultimate goal is to determine the value of x that makes the equation true.

Why the First Step Matters

The first step in solving any linear equation is critical because:

- It simplifies the equation and reduces complexity
- It helps to isolate the variable or the term containing the variable
- It prevents errors that can cascade into more significant mistakes later on
- It builds a strategic approach that can be applied to similar problems

In essence, choosing the appropriate first step sets the foundation for a smooth and accurate solution process.

Step-by-Step Guide to Solving 11 - 3x = 44

Let's walk through the process with a focus on identifying and executing the first step.

Step 1: Understand the Equation's Structure

Look at the equation:

11 - 3x = 44

Identify the parts:

- The constant term: 11
- The variable term: -3x

The goal is to solve for x.

What Is the First Step?

The first step involves getting all the variable terms on one side and constants on the other. Since the variable term is -3x, and it’s currently being subtracted from 11, the most straightforward initial move is to eliminate the constant term on the side with the variable.

In this case, the best first step is to subtract 11 from both sides of the equation.

Why?
Because doing so will move the constant term to the right side, isolating the term containing x. This step adheres to the fundamental principle of maintaining equality: whatever you do to one side, you do to the other.

Performing the First Step: Subtract 11 from Both Sides

Equation:

11 - 3x = 44

Step:

Subtract 11 from both sides:

(11 - 3x) - 11 = 44 - 11

Simplify:

- Left side: 11 - 11 - 3x = 0 - 3x = -3x
- Right side: 44 - 11 = 33

Resulting equation:

-3x = 33

Why Is Subtracting 11 the First Step?

This move is guided by the goal of isolating the variable term. Since 11 is a constant added to -3x, subtracting it from both sides effectively cancels out the constant on the left, leaving -3x alone.

Key points:

- It maintains the balance of the equation
- It simplifies the expression
- It moves closer to isolating the variable x

Next Steps After the First Move

Once the equation is simplified to -3x = 33, the next logical step is to divide both sides by -3 to solve for x:

x = 33 / -3 = -11

Summary of the Entire Solution Process

1. Start with the original equation: 11 - 3x = 44
2. First step: Subtract 11 from both sides to isolate the term with x:
- (11 - 3x) - 11 = 44 - 11
- Simplifies to -3x = 33
3. Second step: Divide both sides by -3:
- x = 33 / -3
- x = -11

Additional Tips for Solving Linear Equations

- Always perform the same operation on both sides to preserve equality.
- Start by eliminating constant terms near the variable.
- When the variable has a coefficient other than 1, divide at the end to solve for the variable.
- Keep track of signs—positive and negative—to avoid errors.
- Check your solution by plugging it back into the original equation.

Common Mistakes to Avoid

- Adding instead of subtracting constants: Remember to move constants to the opposite side by inverse operations.
- Forgetting to perform the operation on both sides: Doing so can unbalance the equation.
- Dividing before isolating the variable: Always isolate the variable first before dividing, to simplify calculations.
- Ignoring signs: Pay attention to negative signs, especially when dividing or subtracting.

Final Thoughts

What Is The First Step To 11 - 3x = 44?
The essential first step is to subtract 11 from both sides of the equation. This action systematically simplifies the problem, paving the way for straightforward algebraic operations that lead to the solution. Recognizing the importance of this initial move not only streamlines the solving process but also cultivates good problem-solving habits applicable across various types of equations.

Mastering the first step in solving linear equations like 11 - 3x = 44 builds a strong foundation for tackling more complex algebraic problems. Remember, clear understanding and careful execution of initial steps are key to becoming proficient in algebra.

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