PLEASE HELP!!!!which Equation Can Be Used To Solve For X?A) 39x = 180B) 39x = 90C) 3x + 36 = 90D) 3x

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Introduction to Solving Equations for X

When faced with algebraic expressions involving an unknown variable, typically represented as 'x,' the goal is to isolate 'x' on one side of the equation to determine its value. This process involves understanding the structure of the equations, the operations involved, and the methods used to manipulate them effectively. The question posed—"which equation can be used to solve for x?"—requires careful analysis of the options to identify the most appropriate and solvable form.

In this article, we will examine each of the given equations, understand how to approach solving them, and explore the fundamental principles of algebra involved in isolating 'x.' By the end, you'll be able to recognize the proper equation to use for solving for 'x' and understand the steps involved in the process.

Understanding the Given Equations

Equation A: 39x = 180

This is a simple linear equation where the variable 'x' is multiplied by 39, and the product equals 180. To solve for 'x,' the basic principle is to perform the inverse operation—division—on both sides of the equation.

Equation B: 39x = 90

Similar to Equation A, this equation involves multiplication of 'x' by 39, equaling 90. The approach to solve for 'x' is identical: divide both sides by 39.

Equation C: 3x + 36 = 90

This is a linear equation with the variable 'x' multiplied by 3 and then increased by 36, resulting in 90. Solving for 'x' involves two steps: first, subtract 36 from both sides to isolate the term with 'x,' then divide by 3.

Equation D: 3x

This is not an equation in the traditional sense because it lacks an equality or comparison. It appears to be incomplete or possibly a typo. To solve for 'x,' it must be part of an equation, such as '3x = ...' or similar. Without an equality, this expression alone cannot be solved for 'x.'

Determining Which Equation Can Be Used to Solve for X

To identify which of the options can be used directly to solve for 'x,' we need to analyze each in terms of its structure and solvability.

Equation A: 39x = 180

- Type: Simple linear equation
- Solution method: Divide both sides by 39
- Equation is solvable for 'x': Yes

Equation B: 39x = 90

- Type: Simple linear equation
- Solution method: Divide both sides by 39
- Equation is solvable for 'x': Yes

Equation C: 3x + 36 = 90

- Type: Linear equation with a constant term
- Solution method:
1. Subtract 36 from both sides
2. Divide by 3
- Equation is solvable for 'x': Yes

Equation D: 3x

- Type: Incomplete expression
- Solution method: Cannot determine without an equality or further information
- Equation is solvable for 'x': No, as given

Fundamental Principles for Solving Equations for X

To understand how to solve equations like the ones above, it's essential to grasp several key principles of algebra.

Inverse Operations

- Addition and subtraction are inverse operations.
- Multiplication and division are inverse operations.
- To isolate 'x,' perform inverse operations to 'undo' the operations attached to 'x.'

Maintaining Balance

- Whatever operation is performed on one side of the equation must be performed on the other side to keep the equation balanced.

Step-by-Step Approach

- Simplify both sides if necessary.
- Use inverse operations to isolate the variable.
- Solve for 'x' and check the solution by substituting back into the original equation.

Step-by-Step Solutions to the Equations

Equation A: 39x = 180

Step 1: Divide both sides by 39.

$$ x = \frac{180}{39} $$

Step 2: Simplify the fraction if possible.

$$ x = \frac{180}{39} = \frac{60}{13} $$

Final answer: $x = \frac{60}{13}$

Equation B: 39x = 90

Step 1: Divide both sides by 39.

$$ x = \frac{90}{39} $$

Step 2: Simplify.

$$ x = \frac{30}{13} $$

Final answer: $x = \frac{30}{13}$

Equation C: 3x + 36 = 90

Step 1: Subtract 36 from both sides.

$$ 3x = 90 - 36 $$
$$ 3x = 54 $$

Step 2: Divide both sides by 3.

$$ x = \frac{54}{3} = 18 $$

Final answer: $x = 18$

Equation D: 3x

As previously mentioned, this expression alone is incomplete. To solve for 'x,' an equation such as "3x = some number" is necessary. For example, if the full equation was "3x = 90," then:

$$ x = \frac{90}{3} = 30 $$

Without an equality, this expression cannot be solved.

Conclusion: Which Equation Can Be Used To Solve For X?

Based on the analysis, Equations A, B, and C are all structured in a way that allows straightforward solving for 'x.' Each involves a linear equation where inverse operations can be applied directly:

- Equation A: $39x=180$ → $x= \frac{180}{39}$
- Equation B: $39x=90$ → $x= \frac{90}{39}$
- Equation C: $3x+36=90$ → subtract 36, then divide by 3

Equation D, as presented, does not constitute a complete equation and thus cannot be used directly to solve for 'x.'

Therefore, the equations most suitable for solving for 'x' are options A, B, and C.

In particular, Equation C exemplifies an equation that involves multiple steps—subtracting a constant and dividing—to isolate 'x,' making it a comprehensive example of solving for 'x' in linear equations.

Final Thoughts and Practical Applications

Understanding which equations can be used to solve for 'x' is fundamental in algebra. These skills are not only important academically but also in real-world problem-solving scenarios such as calculating budgets, analyzing data, or designing systems.

Key takeaways:

- Recognize the structure of the equation.
- Identify the operations applied to 'x.'
- Apply inverse operations systematically.
- Keep the equation balanced during manipulations.
- Simplify the solution as needed.

By mastering these fundamental techniques, students and learners can confidently approach various algebraic problems and determine the correct equations to use for solving for unknown variables.

Remember: Always check your solution by substituting the value of 'x' back into the original equation to verify correctness.

Frequently Asked Questions

Which equation can be used to solve for x if the goal is to find the value of x directly?

Equation A) 39x = 180 is suitable because it can be solved directly by dividing both sides by 39.

If you want to find the value of x in the equation 39x = 90, what operation should you perform?

Divide both sides of the equation by 39 to isolate x: x = 90 ÷ 39.

Which of the given equations is already simplified for solving x directly?

Equation A) 39x = 180 is directly set up for solving x by dividing both sides by 39.

Why can't you directly solve for x in the equation 3x + 36 = 90 without rearranging?

Because there is an additional constant term (36), you need to first subtract 36 from both sides before dividing by 3 to solve for x.

Which equation among the options is incomplete or does not provide enough information to solve for x directly?

Option D) 3x is incomplete because it lacks an equal sign and a value, so it cannot be used to solve for x as it stands.

If the goal is to find x when the equation is 3x + 36 = 90, what steps should you follow?

First subtract 36 from both sides to get 3x = 54, then divide both sides by 3 to find x = 18.

Which equation best represents a situation where you need to isolate x by division?

Equation A) 39x = 180, because dividing both sides by 39 isolates x directly.

Among the options, which equations are linear equations suitable for solving for x?

Equations A) 39x = 180, B) 39x = 90, and C) 3x + 36 = 90 are all linear equations suitable for solving for x.

Additional Resources

PLEASE HELP!!!! Which Equation Can Be Used To Solve For X? A) 39x = 180 B) 39x = 90 C) 3x + 36 = 90 D) 3x

Mathematics often presents us with various equations, some straightforward and others more complex. When faced with an algebraic problem asking, “Which equation can be used to solve for x?”, it’s essential to understand the structure of each option, the rules of algebra, and how to isolate the variable to find its value. This article aims to clarify these concepts, analyze each provided equation, and guide you through the process of selecting the appropriate equation to solve for x. Whether you’re a student, teacher, or someone brushing up on algebra skills, this comprehensive exploration will deepen your understanding of solving equations systematically.

Understanding the Basic Principles of Solving Equations

Before diving into the specific equations, it’s important to revisit the fundamental principles of algebraic manipulation:

- Goal: Isolate the variable (x) on one side of the equation to determine its value.
- Operations: Use inverse operations—addition vs. subtraction, multiplication vs. division—to simplify equations.
- Balance: Whatever operation you perform on one side of the equation, perform on the other side to maintain equality.
- Linearity: These equations are linear, meaning x appears to the first power and no exponents or roots complicate the process.

Key steps to solving for x:

1. Simplify both sides if necessary.
2. Use inverse operations to isolate the term containing x.
3. Solve for x by performing the necessary arithmetic.

Analyzing the Given Equations

Let’s examine each of the four options provided:

A) 39x = 180

This is a simple linear equation where the coefficient of x is 39, and it equals 180. To solve for x:

- Divide both sides by 39:

x = 180 / 39

- Simplify the fraction if possible:

x = 180 / 39

Since 39 and 180 have a common factor of 3:

x = (180 ÷ 3) / (39 ÷ 3) = 60 / 13

- Final answer:

x = 60/13

Implications: This equation directly allows solving for x by division, making it an excellent candidate for the question.

B) 39x = 90

This equation is similar to option A but with a different right-hand side.

- To find x:

x = 90 / 39

- Simplify:

90 / 39

Both numerator and denominator are divisible by 3:

x = (90 ÷ 3) / (39 ÷ 3) = 30 / 13

- Final answer:

x = 30/13

Implications: Like option A, this is straightforward and solvable via division.

C) 3x + 36 = 90

This equation includes an additional constant term (+36), adding a slight step in solving.

- First, subtract 36 from both sides:

3x = 90 - 36

3x = 54

- Then, divide both sides by 3:

x = 54 / 3

x = 18

Implications: This equation involves an extra step but still straightforward, involving subtraction followed by division.

D) 3x

This is incomplete as an equation. It doesn't have an equal sign or a value. Without an equality, it's not an equation that can be solved for x.

Implications: Since this isn’t an equation with a defined value, it cannot be used to solve for x directly.

Identifying Which Equations Are Suitable for Solving for x

Based on the analysis:

- Options A, B, and C are complete equations that can be solved for x.
- Option D lacks an equality and thus cannot be solved as-is.

But which of these is most appropriate or intended?

Interpreting the Question: Which Equation Can Be Used to Solve for X?

The phrasing suggests the goal is to identify an equation from the options that allows a straightforward solution for x. Let’s analyze each in terms of suitability:

1. Equation A (39x = 180):
- Direct and simple.
- Solving involves a single division.

2. Equation B (39x = 90):
- Similar to A, easy to solve.
- Slightly smaller right side, but process identical.

3. Equation C (3x + 36 = 90):
- Slightly more complex because of the addition.
- Requires subtraction before division.

4. Equation D (3x):
- Not an equation unless paired with an equal sign and value.
- Without an equality, cannot be solved for x.

Conclusion:
Equations A, B, and C are all solvable for x. Among these, the simplest form is the one where x is directly isolated through division—equations A and B fit this description.

Practical Steps for Solving Each Equation

Let’s outline a step-by-step approach for each:

For Equation A (39x = 180):

- Step 1: Recognize that x is multiplied by 39.
- Step 2: Divide both sides by 39:

x = 180 / 39

- Step 3: Simplify the fraction:

x = 60 / 13

- Result: x = 60/13

For Equation B (39x = 90):

- Step 1: Recognize that x is multiplied by 39.
- Step 2: Divide both sides by 39:

x = 90 / 39

- Step 3: Simplify:

x = 30 / 13

- Result: x = 30/13

For Equation C (3x + 36 = 90):

- Step 1: Subtract 36 from both sides:

3x = 90 - 36 = 54

- Step 2: Divide both sides by 3:

x = 54 / 3 = 18

- Result: x = 18

Which Equation Is Best to Use?

Given the straightforward nature of Equations A and B, both are excellent candidates. They involve only division to isolate x. Equation C, while equally solvable, introduces an extra step but is still manageable.

However, in the context of the original question—"Which equation can be used to solve for x?"—the most direct are A and B.

Additional Considerations

- Simplification: Always look for the simplest form of the equation that allows direct solving.
- Equation completeness: Ensure the equation is complete with an equality and a value.
- Variable isolation: Focus on equations where x is multiplied by a coefficient, enabling division.

Summary and Final Recommendations

- Equations A and B are perfect for solving x because they involve a single multiplication and an equality, allowing straightforward division.
- Equation C also allows solving, but involves an extra step of subtraction.
- Equation D is incomplete; without an equality, it cannot be used to solve for x.

In conclusion, when asked, “Which equation can be used to solve for x?” the answer depends on the context. If choosing the simplest, most direct equations, options A and B are ideal. They exemplify basic algebraic principles and are excellent starting points for solving for an unknown variable.

Final Thoughts

Understanding the structure of algebraic equations and the rules for manipulating them is fundamental in solving for unknowns. Whether tackling simple equations like 39x = 180 or more complex ones involving additional constants, the key is to isolate the variable systematically. Equations A and B demonstrate this clearly, emphasizing the importance of recognizing coefficients and the role of inverse operations. As you advance in math, you'll encounter more complex equations, but the core principles remain the same: balance, inverse operations, and systematic steps.

By mastering these basic techniques, you'll be well-equipped to approach any algebraic problem confidently—and perhaps help others facing similar questions in their mathematical journeys.

Please Help Which Equation Can Be Used To Solve For X A 39x 180b 39x 90c 3x 36 90d 3x

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