Step 1: 10 + 8x < 6x 4Step 2: 10 < 2x 4Step 3: 6 < 2xStep 4: ________What Is The Final Step

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Understanding the Context of the Inequalities

Mathematics is a foundational subject that helps develop critical thinking and problem-solving skills. One common area of focus is solving inequalities involving variables, which can sometimes appear complex at first glance. The sequence of steps provided appears to be a guided approach to solving a set of inequalities, leading toward determining the value(s) of the variable involved.

The sequence given is:

1. Step 1: $10 + 8x < 6x\ 4$
2. Step 2: $10 < 2x\ 4$
3. Step 3: $6 < 2x$
4. Step 4: ________What Is The Final Step

The objective is to understand each step, the transformations involved, and to identify the missing final step that completes the solution process.

Breaking Down Each Step in the Inequality Solution

Step 1: 10 + 8x < 6x 4

This initial expression appears somewhat ambiguous due to the formatting. Interpreting it correctly is essential:

- The expression likely means:
$10 + 8x < 6x + 4$

- Alternatively, it could be:
$10 + 8x < 6x\ 4$

Given the context and the progression of steps, the first interpretation makes more sense, as it simplifies to manageable algebraic steps.

Assumption:
Step 1: $10 + 8x < 6x + 4$

This is a typical linear inequality involving the variable x.

Step 2: 10 < 2x 4

Similarly, this appears to be a simplified form of the previous inequality. Based on common algebraic manipulations, it probably means:

- $10 < 2x + 4$

Reasoning:

- Subtract 6x from both sides in Step 1:

$10 + 8x < 6x + 4$
Subtract 6x:

$10 + 2x < 4$

- But the step shows $10 < 2x + 4$, which suggests the previous step might have been:

$10 + 8x < 6x + 4$

Subtract 6x:

$10 + 2x < 4$

- Rearranged to:

$10 + 2x < 4$

- Then, subtract 10:

$2x < -6$

- Or, perhaps, the step as given is:

$10 < 2x + 4$

which is obtained by subtracting 4 from both sides of the previous inequality.

In conclusion:

The sequence of transformations seems to be:

- From $10 + 8x < 6x + 4$
- Subtract $6x$:

$10 + 2x < 4$

- Subtract 10:

$2x < -6$

- Divide both sides by 2:

$x < -3$

Step 3: $6 < 2x$

This step indicates progress toward isolating x:

- From the previous step, after dividing both sides by 2, we get:

$x < -3$

- Alternatively, if the previous inequality was $2x < -6$, then:

$2x < -6$

- Dividing both sides by 2:

$x < -3$

But the step shows $6 < 2x$, which is a different inequality.

Possible reasoning:

- Maybe the previous step was:

$2x > 6$

which simplifies to:

$x > 3$

Alternatively, perhaps the sequence is emphasizing the process of solving inequalities to find the bounds of x.

Clarifying the Series of Inequalities: A Step-by-Step Solution

Given the potential ambiguities, let's reconstruct a logical sequence of solving an inequality similar to what is implied.

Step-by-step process:

1. Start with the initial inequality:

$10 + 8x < 6x + 4$

2. Subtract 6x from both sides:

$10 + 2x < 4$

3. Subtract 10 from both sides:

$2x < -6$

4. Divide both sides by 2:

$x < -3$

This is the solution to the inequality.

The Final Step: Completing the Solution

Based on the reconstructed steps, the last step involves isolating the variable x and expressing the solution set.

The final step is:

Expressing the solution in interval notation or inequality form:

- Since $x < -3$, the solution set includes all real numbers less than -3.

Therefore, the final step is:

- State the solution:

$x < -3$

What Is The Final Step? A Complete Explanation

The final step in solving any inequality involves:

- Clearly stating the solution set after simplifying the inequality.
- Expressing the answer in an understandable form (inequality or interval notation).
- Verifying the solution by plugging in test values to ensure correctness.

In this context, the final step is:

Step 4: Write the solution set

- Solution: $x < -3$

- In interval notation: $(-\infty, -3)$

Why is this the final step?

Once you have isolated the variable and simplified the inequality, the last part is to:

- Express the solution explicitly so anyone reading the solution understands the bounds of x.
- Verify that the solution satisfies the original inequality if necessary.

Additional Tips for Solving Inequalities

When tackling inequalities similar to the one discussed, keep

these tips in mind:

- Always perform the same operation on both sides.
- Remember that multiplying or dividing both sides by a negative number reverses the inequality sign.
- Simplify step-by-step to avoid errors.
- Double-check each step to ensure transformations are correct.
- Express your final answer clearly in inequality or interval notation.

Conclusion: Mastering the Final Step in Inequality Solutions

Understanding the final step in solving inequalities is crucial for accurately interpreting the solution. It involves consolidating all previous work and clearly stating the bounds of the variable. Whether you're solving for x in a simple linear inequality or tackling more complex expressions, the principle remains the same: simplify, isolate the variable, and clearly state the solution.

In our reconstructed example, the final step is to write:

$x < -3$

or equivalently,

$x \in (-\infty, -3)$

This concise expression allows anyone to understand the range of values x can take that satisfy the original inequality.

Final Thoughts

Mastering inequality solving requires practice and attention to detail. Remember to:

- Carefully interpret the expressions.
- Follow each algebraic step logically.
- Be mindful of the rules concerning inequality signs.
- Clearly state your solution in an accessible format.

By following these guidelines, you'll confidently approach and solve inequalities, ensuring accuracy and clarity in your mathematical reasoning.

If you want to improve your inequality-solving skills further, consider practicing a variety of problems, and always double-check your work at each step. With consistent practice, the process becomes intuitive, and you'll quickly identify the final step to confidently present your solution.

Frequently Asked Questions

What is the initial inequality in the problem?

The initial inequality is $10 + 8x < 6x$.

How do you simplify the inequality $10 + 8x < 6x$?

Subtract $6x$ from both sides to get $10 + 8x - 6x < 0$, which simplifies to $10 + 2x < 0$.

What is the next step after simplifying to $10 + 2x < 0$?

Subtract 10 from both sides to get $2x < -10$.

How do you solve for x in $2x < -10$?

Divide both sides by 2 to find $x < -5$.

What is the step shown as $10 < 2x$ in the problem?

That appears to be a misstep; the correct inequality after subtracting 10 should be $2x < -10$, not $10 < 2x$.

What is the missing step (Step 4) in solving for x?

Divide both sides of $2x < -10$ by 2 to get $x < -5$, which is the final solution.

What is the final step to find the solution for x?

Divide both sides of $2x < -10$ by 2, resulting in $x < -5$.

Additional Resources

Step 1: $10 + 8x < 6x$ 4Step 2: $10 < 2x$ 4Step 3: $6 < 2x$Step 4: ________What Is The Final Step

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Introduction

Mathematics often presents us with a series of problems that build on each other, leading to a final solution or understanding. One such sequence involves solving inequalities—a fundamental skill in algebra that underpins many higher-level concepts. In this article, we explore a multi-step process that begins with a complex inequality and gradually simplifies it toward a conclusion. The sequence is presented as:

- Step 1: $10 + 8x < 6x$ 4Step 2: $10 < 2x$ 4Step 3: $6 < 2x$
- Step 4: ________What Is The Final Step?

While the notation appears unconventional, it offers a unique opportunity to delve into the mechanics of solving inequalities, understanding each step's significance, and identifying the logical progression leading to the final solution. We will dissect each step, clarify ambiguities, and illustrate the typical methods used in solving such inequalities.

Understanding the Starting Point: Analyzing Step 1

The Original Inequality

The initial statement is:

Step 1: $10 + 8x < 6x$ 4Step 2: $10 < 2x$ 4Step 3: $6 < 2x$

At first glance, the notation seems inconsistent with standard algebraic expressions. The phrase "6x 4Step 2" likely indicates a formatting or transcription error. A reasonable interpretation is that the inequality is:

$$10 + 8x < 6x + 4$$

This assumption aligns with common algebraic inequalities and makes sense within the context of the progression.

Reconstructed Step 1

Thus, the starting inequality is:

$$10 + 8x < 6x + 4$$

This is a typical linear inequality involving a variable and constants, which can be approached systematically.

Step 2: Simplifying the Inequality

Given the reconstructed inequality:

$10 + 8x < 6x + 4$

Our goal is to isolate the variable x on one side to understand its possible values.

Step 2: Subtract 6x from Both Sides

- **$10 + 8x - 6x < 6x + 4 - 6x$**

- **Simplifies to:**

$10 + 2x < 4$

Step 3: Subtract 10 from Both Sides

- **$10 + 2x - 10 < 4 - 10$**

- **Simplifies to:**

$2x < -6$

Step 4: Divide Both Sides by 2

- **$(2x) / 2 < (-6) / 2$**

- **Simplifies to:**

$x < -3$

This is the solution to the inequality, indicating that x must be less than -3.

The Progression Through Steps

The article's original sequence indicates a step-by-step narrowing of the inequality:

1. Starting with the more complex inequality involving multiple terms.
2. Simplifying to a basic inequality involving x.
3. Solving for x to find the critical boundary point.

The key idea is to methodically manipulate inequalities using algebraic principles, ensuring each step maintains the inequality's truth.

Clarifying the Other Steps

The original sequence mentions:

- Step 2: 10 < 2x 4
- Step 3: 6 < 2x

These seem to be partial or misformatted steps, possibly representing intermediate stages. Based on standard algebraic solving, the sequence would be:

- From 10 + 8x < 6x + 4, subtract 6x:

$10 + 2x < 4$

- Subtract 10:

$2x < -6$

- Divide by 2:

$x < -3$

Any further steps would involve interpreting the inequalities or perhaps considering the solution set.

The Final Step: What Is It?

Given the pattern and typical solving process, the final step in this inequality-solving sequence is:

Expressing the solution clearly:

$x < -3$

But often, in a more comprehensive context, the final step involves writing the solution in interval notation, graphically representing the solution, or verifying the solution.

Possible Final Step

- Expressing the solution set:

The final step could be:

> "The solution set of the inequality is all real numbers less than -3, which can be written in interval notation as $(-\infty, -3)$."

- Graphical representation:

Plotting on a number line, shading all points to the left of -3, indicating all solutions satisfying the inequality.

- Verification:

To confirm, pick a test value less than -3, such as -4:

- Plug into the original inequality:

$10 + 8(-4) = 10 - 32 = -22$

$6(-4) + 4 = -24 + 4 = -20$

Is $-22 < -20$? Yes.

- Pick a value greater than -3, such as 0:

$10 + 8(0) = 10$

$6(0) + 4 = 4$

Is $10 < 4$? No, so the solution is indeed all x less than -3.

Summarized Final Step:

"Conclude that the solution to the inequality is all real numbers less than -3, which can be expressed as $(-\infty, -3)$."

Broader Implications and How to Approach Similar Problems

Understanding the steps involved in solving inequalities is crucial in algebra:

1. Identify the inequality's structure—are variables on both sides? Are there fractions or parentheses?
2. Simplify step-by-step—subtract, add, multiply, or divide both sides by positive numbers, respecting inequality rules.
3. Isolate the variable—aim to get x alone on one side.
4. Solve for the variable—determine the boundary points.
5. Express the solution set—either as an inequality or interval notation.
6. Verify the solution—by plugging in test points.

Final Thoughts

While the original sequence appears somewhat fragmented or misformatted, standard algebraic practice guides us through the logical progression of solving inequalities. Recognizing the importance of each step—simplification, isolation, and verification—is fundamental in mastering algebraic inequalities.

In conclusion, the final step in the process of solving the inequality $10 + 8x < 6x + 4$ is:

> Expressing the solution as $x < -3$, and optionally, representing this solution graphically or in interval notation.

This logical culmination ensures that the problem is fully resolved, providing clarity on the range of possible values for x that satisfy the original inequality.

Note: Always double-check your work by substituting values within and outside the solution set to confirm the correctness of your solution. Mastery of these steps is essential not just for exams but for developing a robust understanding of algebraic reasoning and problem-solving skills.

Step 1 10 8x Lt 6x 4step 2 10 Lt 2x 4step 3 6 Lt 2xstep 4 What Is The Final Step

Step 1 10 8x Lt 6x 4step 2 10 Lt 2x 4step 3 6 Lt 2xstep 4 What Is The Final Step

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