

When Subtracting 8.5 From A Certain Number, The Result Is 34.92, As Seen Below. What Number Should Go

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Understanding basic algebraic concepts is essential for solving everyday mathematical problems. One common type of problem involves finding an unknown number based on a simple equation. In this case, the problem states that when 8.5 is subtracted from a certain number, the result is 34.92. The challenge is to determine the original number. This type of problem not only enhances your algebra skills but also helps in developing logical thinking and problem-solving abilities. In this article, we will explore how to solve such equations step-by-step, discuss related concepts, and provide practical tips to handle similar problems confidently.

Understanding the Problem

Before diving into the solution, it's important to understand what the problem is asking. The statement is:

When subtracting 8.5 from a certain number, the result is 34.92.

Mathematically, this can be expressed as:

$$x - 8.5 = 34.92$$

Where:

- x is the unknown number we need to find.
- 8.5 is the number being subtracted.
- 34.92 is the result after subtraction.

The goal is to find the value of x.

Setting Up the Equation

The problem provides a direct equation:

$$x - 8.5 = 34.92$$

To find x, we need to isolate it on one side of the equation. The standard approach involves performing inverse operations.

Solving the Equation Step-by-Step

Let's walk through the process of solving for x:

Step 1: Identify the operation

- The operation involves subtraction: $x - 8.5$.

Step 2: Inverse operation

- To undo subtraction, perform addition.

Step 3: Add 8.5 to both sides

- This maintains the equality while isolating x:

$$x - 8.5 + 8.5 = 34.92 + 8.5$$

Simplifies to:

$$x = 34.92 + 8.5$$

Step 4: Calculate the sum

- Add the numbers:

$$x = 34.92 + 8.5$$

- To perform the addition accurately, align decimal points:

$$\begin{array}{r} 34.92 \\ + 8.50 \\ \hline 43.42 \end{array}$$

- Therefore:

$$x = 43.42$$

Interpreting the Result

The value of the original number x is 43.42. This means:

- When you subtract 8.5 from 43.42, the result is 34.92.
- To verify, perform the subtraction:

$$43.42 - 8.5 = 34.92$$

- Confirming the solution is correct.

Additional Examples and Practice Problems

To solidify understanding, consider similar problems:

Example 1:

When subtracting 5.75 from a certain number, the result is 12.25. What is the number?

Solution:

$$\text{Equation: } x - 5.75 = 12.25$$

Add 5.75 to both sides:

$$x = 12.25 + 5.75 = 18.00$$

Answer: 18.00

Example 2:

Subtract 3.4 from a number and the result is 7.6. Find the original number.

Solution:

$$\text{Equation: } x - 3.4 = 7.6$$

Add 3.4:

$$x = 7.6 + 3.4 = 11.00$$

Answer: 11.00

Common Mistakes to Avoid

While solving such equations seems straightforward, certain errors can occur:

- Incorrect addition or subtraction: Ensure you perform the inverse operation correctly.
- Misalignment of decimals: Always align decimal points for precise addition or subtraction.
- Neglecting the signs: Remember that subtracting a number is the inverse of adding it, and vice versa.
- Forgetting to verify: Always substitute your answer back into the original equation to confirm accuracy.

Tips for Solving Similar Algebraic Problems

To improve your problem-solving skills:

- Understand the problem thoroughly: Read carefully and identify what is given and what you need to find.
- Write the equation clearly: Translate words into mathematical symbols.
- Perform inverse operations systematically: Use addition to undo subtraction, subtraction to undo addition, etc.
- Use calculator for complex calculations: Especially with decimals or large numbers.
- Check your work: Substitute your answer back into the original problem to ensure correctness.
- Practice regularly: The more problems you solve, the more confident you become.

Real-World Applications of Such Problems

Understanding how to solve for an unknown number when subtracting a known value has practical applications:

- Financial calculations: Determining remaining balance after withdrawal.
- Shopping and discounts: Calculating original price before discount.
- Data analysis: Finding initial values based on changes.
- Science experiments: Calculating initial quantities based on observed differences.

Conclusion

In summary, solving the problem "When subtracting 8.5 from a certain number, the result is 34.92"

involves setting up a simple linear equation and applying inverse operations. The key steps include translating the problem into an algebraic equation, adding 8.5 to both sides to isolate the variable, and performing precise calculations. The original number, in this case, is 43.42, which is obtained by adding 8.5 to 34.92. Mastering such basic algebraic techniques is fundamental for tackling a wide range of mathematical and real-life problems confidently. Remember to double-check your solutions and practice regularly to enhance your problem-solving skills.

Frequently Asked Questions

What is the unknown number if subtracting 8.5 from it results in 34.92?

The unknown number is 43.42 because $34.92 + 8.5 = 43.42$.

How do you find the number when subtracting 8.5 gives 34.92?

Add 8.5 to 34.92 to find the original number: $34.92 + 8.5 = 43.42$.

Is the operation involved in this problem addition or subtraction?

The problem involves addition to find the original number after subtraction.

Can this problem be solved using a simple equation?

Yes, set up the equation: $x - 8.5 = 34.92$, then solve for x by adding 8.5 to both sides.

What is the importance of understanding inverse operations in this problem?

Understanding inverse operations helps you correctly reverse the subtraction to find the original number, which is addition in this case.

Additional Resources

Mathematics Problem Solving

In the realm of everyday calculations and academic exercises alike, understanding how to manipulate basic equations is an essential skill. One common type of problem involves finding an unknown number based on a simple subtraction operation. Today, we delve into a specific scenario: "When subtracting 8.5 from a certain number, the result is 34.92." This seemingly straightforward problem offers an excellent opportunity to explore the fundamentals of algebra, the process of solving for an unknown, and the importance of precise calculation in real-world contexts.

This comprehensive guide aims to dissect the problem step-by-step, providing clarity for learners, educators, and anyone interested in sharpening their problem-solving skills. We will explore the underlying principles, walk through the solution methodically, and discuss practical applications of such calculations.

Understanding the Problem

The core question here is: "What number should go?" when we know that subtracting 8.5 from it results in 34.92. To answer this, we need to understand the components:

- The operation involved: subtraction
- The known quantities: 8.5 (the number being subtracted), 34.92 (the result after subtraction)
- The unknown: the original number before subtraction

This problem is a classic example of a linear equation, which can be approached systematically using algebraic principles.

Breaking Down the Equation

The problem can be translated into the algebraic equation:

$$x - 8.5 = 34.92$$

Where:

- x represents the unknown number we're trying to find.

Our goal is to isolate x , which involves performing inverse operations—specifically, addition in this case—on both sides of the equation.

The Step-by-Step Solution Process

Step 1: Write the equation clearly

As established:

$$x - 8.5 = 34.92$$

Step 2: Isolate x by adding 8.5 to both sides

To undo the subtraction, add 8.5 to both sides:

$$x - 8.5 + 8.5 = 34.92 + 8.5$$

Simplifies to:

$$x = 34.92 + 8.5$$

Step 3: Perform the addition

Adding the numbers:

$$34.92 + 8.5 = ?$$

Let's examine the addition in detail:

1. Align decimal points:

$$34.92$$

+ 8.50 (adding a zero to match decimal places)

2. Add from right to left:

- Hundredths: $2 + 0 = 2$

- Tenths: $9 + 5 = 14$, write 4, carry 1

- Units: $4 + 8 + 1$ (carry) = 13, write 3, carry 1

- Tens: $3 + 0 + 1$ (carry) = 4

3. Final sum:

$$43.42$$

Therefore:

$$x = 43.42$$

Interpreting the Result

The solution reveals that the original number before subtracting 8.5 must be 43.42 to result in 34.92 after subtraction.

This problem exemplifies fundamental algebraic techniques, emphasizing how inverse operations enable us to solve for unknowns efficiently.

Practical Applications and Significance

Understanding such calculations is vital across numerous domains:

- Financial Transactions: Calculating original amounts after deductions or discounts.
- Inventory Management: Determining initial stock levels after sales or removals.
- Science and Engineering: Adjusting measurements by subtracting known quantities to find starting values.
- Educational Settings: Enhancing problem-solving skills essential for advanced mathematics.

Here's a quick reference list of similar problems:

- Finding the original price after a discount.
- Calculating the initial weight of a substance before evaporation.
- Determining the starting point in a measurement after a known reduction.

Key Takeaways for Learners

- Inverse Operations Are Crucial: To isolate an unknown, perform the opposite operation on both sides of the equation.
- Pay Attention to Decimal Precision: When dealing with decimal numbers, align decimal points and ensure accurate addition/subtraction.
- Always Re-Check Your Work: Substituting the found value back into the original equation verifies correctness.

Rechecking the solution:

$$\backslash 43.42 - 8.5 = ? \backslash$$

$$\backslash 43.42 - 8.5 = 34.92 \backslash \text{ (which matches the known result)}$$

Confirms that the calculation is accurate.

Conclusion

Solving for an unknown number in a simple subtraction problem might seem elementary, but it forms the foundation for more complex mathematical reasoning. The key takeaway from this scenario is the importance of understanding inverse operations and precise arithmetic.

In this case, recognizing that adding 8.5 to the result yields the original number is essential. The calculated number, 43.42, is the solution that satisfies the initial condition. Whether you're tackling academic exercises or applying similar logic in real-world scenarios, mastering these fundamental techniques is invaluable.

By approaching such problems systematically and verifying your results, you develop confidence and accuracy—skills that are indispensable in both educational and practical contexts.

Remember: Every simple problem solved enhances your overall mathematical fluency, paving the

way for tackling more advanced challenges with ease.

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