

Fourteen Subtracted From 2 Times A Number Is 28. Write An Equation?

Fourteen Subtracted From 2 Times A Number Is 28. Write An Equation?

When faced with a word problem like "Fourteen subtracted from 2 times a number is 28," the first step is to translate the words into a mathematical equation. This process involves understanding the language, identifying the unknowns, and setting up an algebraic expression that accurately represents the problem. In this article, we will explore how to convert this specific problem into an algebraic equation, solve it step-by-step, and discuss related concepts to deepen your understanding of linear equations and their applications.

Understanding the Problem Statement

Before jumping into the equation, it's essential to comprehend what the problem is asking. The phrase "Fourteen subtracted from 2 times a number is 28" contains several key components:

- "2 times a number" indicates multiplication of an unknown variable by 2.
- "Fourteen subtracted from" suggests that we are subtracting 14 from the previous expression.
- The entire expression equals 28, which is the given value.

By carefully analyzing these components, you can accurately translate the problem into an algebraic form.

Translating Words into an Algebraic Equation

Step 1: Assign a Variable

The first step in solving word problems is to assign a variable to the unknown quantity. Typically, the variable is chosen as:

- x , y , or any letter representing the unknown number.

In this case, let:

- $(x) =$ the unknown number.

Step 2: Express the Statement Mathematically

Now, interpret the phrase:

- "2 times a number" becomes $(2x)$.
- "Fourteen subtracted from" indicates subtraction: $(2x - 14)$.
- "Is 28" indicates the expression equals 28.

Putting it all together, the algebraic equation is:

$$(2x - 14 = 28)$$

This is the fundamental equation that models the problem.

Solving the Equation Step-by-Step

Once the equation is established, the next step is to solve for (x) . Here's a structured approach:

Step 1: Add 14 to both sides

To isolate the term containing (x) , add 14 to both sides:

$$\begin{aligned} & (\\ & 2x - 14 + 14 = 28 + 14 \\ &) \\ & (\\ & 2x = 42 \\ &) \end{aligned}$$

Step 2: Divide both sides by 2

To solve for (x) , divide both sides by 2:

$$\begin{aligned} & (\\ & \frac{2x}{2} = \frac{42}{2} \\ &) \\ & (\\ & x = 21 \end{aligned}$$

\]

Conclusion: The unknown number is 21.

Verifying the Solution

It's important to verify your solution by substituting $(x = 21)$ back into the original expression:

\[
2 \times 21 - 14 = 42 - 14 = 28
\]

Since the result matches the given value, the solution is correct.

Additional Insights and Related Concepts

Understanding Linear Equations

The equation $(2x - 14 = 28)$ is a linear equation in one variable. Linear equations are characterized by the highest power of the variable being 1, and they graph as straight lines. Solving such equations involves simple algebraic manipulations like addition, subtraction, multiplication, and division.

Key Points in Solving Linear Equations:

- Isolate the variable on one side of the equation.
- Perform inverse operations to simplify the equation.
- Check your solution by substituting back into the original equation.

Real-World Applications

Translating word problems into equations is a fundamental skill in mathematics with numerous applications, including:

- Computing budgets and expenses.
- Analyzing business profit and loss.
- Calculating distances, speeds, and times.
- Solving engineering and science problems.

Understanding how to write and solve equations like $(2x - 14 = 28)$ empowers learners to approach real-world problems systematically.

Practice Problems for Mastery

To reinforce your understanding, consider practicing with similar problems:

1. Three subtracted from 5 times a number equals 22. Write the equation and solve for the number.
2. Sixteen less than twice a number gives 50. Formulate the equation and find the number.
3. A number doubled, then decreased by 14, results in 28. Write and solve the equation.

Summary and Key Takeaways

- The phrase "Fourteen subtracted from 2 times a number is 28" translates to the algebraic equation $(2x - 14 = 28)$.
- Solving the equation involves adding 14 to both sides and then dividing by 2, leading to $(x = 21)$.
- Verifying the solution ensures correctness.
- Understanding how to convert words into equations is crucial for solving many types of problems.
- Mastery of linear equations underpins broader mathematical skills and real-world problem-solving.

SEO Optimization Tips for Math Word Problems

- Use relevant keywords such as "write an equation from word problem," "solve for a number," "algebraic equations," and "linear equations."
- Incorporate descriptive headings and subheadings to improve readability.
- Provide clear, step-by-step solutions to enhance user engagement.
- Include practice problems to encourage active learning.
- Use bullet points and lists to organize key concepts.

By mastering the process of translating words into equations and solving for the unknown, students and learners can confidently tackle a variety of math problems. Whether in academic settings or real-life scenarios, these skills are essential for analytical thinking and problem-solving success.

Frequently Asked Questions

What is the algebraic equation for 'Fourteen subtracted from 2 times a number is 28'?

The equation is $2x - 14 = 28$.

How do you solve the equation $2x - 14 = 28$ for x ?

Add 14 to both sides to get $2x = 42$, then divide both sides by 2 to find $x = 21$.

What does the variable x represent in the equation $2x - 14 = 28$?

x represents the unknown number in the problem.

Can you verify the solution $x = 21$ in the original equation?

Yes. Substitute $x = 21$: $2(21) - 14 = 42 - 14 = 28$, which confirms the solution is correct.

What is the importance of translating word problems into equations like $2x - 14 = 28$?

Converting words into equations helps to systematically solve for the unknown and understand the problem mathematically.

Additional Resources

Fourteen Subtracted From 2 Times A Number Is 28—this phrase encapsulates a classic algebraic problem that serves as a foundational exercise for students learning how to translate words into mathematical expressions. Such problems are not only essential for developing mathematical literacy but also for honing logical reasoning skills. In this article, we will delve into the process of formulating an equation from the given statement, explore the underlying principles of algebra that facilitate this translation, and analyze how to solve the problem step by step. By doing so, we aim to provide a comprehensive understanding that is accessible to learners at various levels.

Understanding the Problem Statement

Deciphering the Language

The problem reads: "Fourteen subtracted from 2 times a number is 28." At first glance, it appears straightforward, but breaking down the language is crucial to accurately formulating an equation.

- "2 times a number": This indicates multiplication of an unknown number by 2. If we denote the unknown number as x , then "2 times a number" translates to $2x$.
- "Fourteen subtracted from": This phrase indicates a subtraction operation where 14 is being subtracted from another quantity. The key is to identify what this quantity is.
- "is 28": The phrase "is" signals equality, indicating that the expression on the left side of the equation equals 28.

Putting it together, the phrase suggests that when 14 is subtracted from 2 times the number, the result is 28.

Converting Words into Mathematical Language

The critical step is translating the sentence into a precise mathematical equation. This involves:

1. Identifying the variable: Since the problem involves an unknown number, assign a variable, typically x .

2. Expressing the operations: Recognize the multiplication ("2 times a number") and subtraction ("Fourteen subtracted from...") operations.

3. Establishing the equality: The phrase "is 28" confirms the equation equals 28.

Thus, the algebraic representation becomes:

$$\begin{aligned} & \backslash[\\ & 2x - 14 = 28 \\ & \backslash] \end{aligned}$$

This equation forms the backbone for solving the problem.

Formulating the Equation

Step-by-Step Construction

Constructing the equation from the word problem involves methodical steps:

1. Assign the variable: Let (x) be the unknown number.
2. Translate "2 times a number": $(2x)$.
3. Translate "Fourteen subtracted from": $(2x - 14)$.
4. Set the expression equal to 28: $(2x - 14 = 28)$.

This systematic approach ensures accuracy and clarity, especially for learners who are new to algebra.

Alternative Interpretations

While the standard interpretation is as above, it's worth considering possible ambiguities:

- Could the statement be read differently? For example, "Fourteen subtracted from 2 times a number" could be misinterpreted as:
 - $(14 - 2x)$, which would change the equation.
- However, context and conventional language usage suggest the original interpretation is correct.

- If ambiguity exists, clarifying questions or rephrasing the problem can help. For educational purposes, emphasizing the importance of precise language is crucial.

Solving the Equation: Step-by-Step Analysis

Given Equation:

$$\begin{aligned} & \backslash[\\ & 2x - 14 = 28 \\ & \backslash] \end{aligned}$$

Step 1: Isolate the Variable Term

Add 14 to both sides to eliminate the constant on the left:

$$\begin{aligned} & \backslash[\\ & 2x - 14 + 14 = 28 + 14 \\ & \backslash] \end{aligned}$$

Simplifies to:

$$\begin{aligned} & \backslash[\\ & 2x = 42 \\ & \backslash] \end{aligned}$$

Step 2: Solve for x

Divide both sides of the equation by 2:

$$\begin{aligned} & \backslash[\\ & x = \frac{42}{2} \\ & \backslash] \end{aligned}$$

$$\begin{aligned} & \backslash[\\ & x = 21 \\ & \backslash] \end{aligned}$$

Result: The unknown number is 21.

Step 3: Verification

To ensure the solution is correct, substitute $(x = 21)$ back into the original statement:

- Calculate "2 times the number": $(2 \times 21 = 42)$.
- Subtract 14: $(42 - 14 = 28)$.
- Confirm if this matches the statement "is 28": Yes, it does.

The solution is verified, confirming that $(x = 21)$ satisfies the original problem.

Deeper Insights and Broader Context

Relevance of Algebraic Translation

The process demonstrated exemplifies a fundamental skill in algebra: translating verbal descriptions into equations. This skill is vital across various disciplines, including physics, economics, engineering, and data science, where real-world problems often need to be modeled mathematically.

Common Challenges and Misconceptions

- Misreading the language: Students might misinterpret phrases like "subtracted from" or "times" leading to incorrect equations.
- Variable assignment: Choosing the wrong variable or inconsistent notation can cause confusion.
- Sign errors: Forgetting to change signs when moving terms across the equality can lead to mistakes.

Addressing these challenges involves careful reading, practice, and understanding of basic algebraic rules.

Extensions and Variations

- Changing the constants: Altering the number 28 or the 14 can lead to

similar but more complex equations.

- Introducing fractions or decimals: Adds complexity, requiring careful handling of operations.
- Word problems with multiple steps: Integrating additional information to formulate more elaborate equations.

These variations help deepen understanding and develop problem-solving agility.

Practical Applications and Real-World Relevance

While this problem appears purely academic, its principles are applicable in real-world scenarios:

- Financial calculations: Determining initial amounts given certain deductions or additions.
- Engineering: Calculating parameters based on constraints expressed in words.
- Business: Estimating quantities based on profit, loss, or cost descriptions.

Understanding how to set up and solve such equations is a transferable skill that enhances critical thinking and quantitative literacy.

Conclusion

The problem statement, "Fourteen subtracted from 2 times a number is 28," is more than just a simple algebraic exercise. It exemplifies the essential skill of translating natural language into mathematical expressions, a cornerstone of mathematical literacy. By assigning a variable, carefully interpreting the language, and systematically solving the resulting equation, we find the unknown number to be 21.

This process underscores the importance of precise language, logical reasoning, and methodical problem-solving in mathematics. Mastery of these skills not only prepares learners for more advanced topics but also fosters a mindset capable of tackling complex, real-world problems that require clear analytical thinking. As students and professionals alike continue to

encounter word problems in various contexts, the ability to confidently formulate and solve equations remains an invaluable asset.

In Summary:

- The key phrase "Fourteen subtracted from 2 times a number is 28" translates to the algebraic equation $(2x - 14 = 28)$.
- Solving yields $(x = 21)$.
- Verification confirms the solution's correctness.
- The process highlights core algebraic principles and their practical importance.

By mastering this type of problem, learners develop foundational skills that extend far beyond the classroom, equipping them to interpret and solve diverse real-world challenges with confidence and precision.

Fourteen Subtracted From 2 Times A Number Is 28 Write An Equation

Fourteen Subtracted From 2 Times A Number Is 28 Write An Equation

Related Articles

- [Does Nations Have A Preference When It Comes To Using GDP AndGNP?](#)
- [Two Areas Of The Brain Missing The Blood-brain Barrier Are The](#)
- [What Is The Narrative Perspective In Chapter 1 Of Jekyll And Hyde?](#)

[Back to Home](#)