

Given The Equation $6x + 18 = 72$:Part A: Write A Short Word Problem About A Purchase Made To Illustrate

Given The Equation $6x + 18 = 72$:Part A: Write A Short Word Problem About A Purchase Made To Illustrate

Introduction

Mathematics often finds its most practical applications in real-life scenarios, especially through word problems that help us understand algebraic concepts. One common algebraic equation, such as $6x + 18 = 72$, can be better understood when contextualized within everyday situations, like making a purchase. This article explores how to craft a meaningful word problem based on this equation, illustrating the process of translating an algebraic expression into a real-world scenario. Whether you're a student seeking to improve problem-solving skills or an educator designing engaging lessons, understanding how to develop and interpret such word problems is essential.

Understanding the Algebraic Equation

Before developing a word problem, it's important to understand what the equation $6x + 18 = 72$ represents.

- $6x$: This term suggests that a certain quantity, x , is being multiplied by 6. It could represent the total cost of purchasing x items, each priced at a specific rate.
- 18: This could signify an additional fixed cost, such as tax, shipping, or a flat fee.
- 72: This is the total amount paid or the total cost after all charges.

The goal is to interpret this equation in a relatable context, such as a shopping scenario, to better grasp the underlying mathematics.

Crafting a Short Word Problem About a Purchase

Step 1: Identify the Variables and Constants

- Variable (x): Number of items purchased or units of a product.
- Coefficient (6): Cost per item.
- Constant (18): Additional fixed charge or fee.
- Total (72): Total amount spent or paid.

Step 2: Develop the Context

Think about a shopping situation where a customer buys multiple identical items, each costing the same amount, with an added fee or charge that applies regardless of the number of items.

Step 3: Write the Word Problem

Here is an example of a short, clear word problem based on the equation:

> "Maria went to a grocery store to buy some packs of bottled water. Each pack costs \\$6. Additionally, there was a flat service fee of \\$18 for the entire purchase. After paying for her items and the fee, Maria spent a total of \\$72. How many packs of bottled water did Maria buy?"

This problem encapsulates the equation $6x + 18 = 72$ in a real-world context, making it easier for learners to visualize and solve.

Breaking Down the Word Problem

To effectively solve the problem, students should understand the relationship between the story and the algebraic equation.

- Number of packs (x): The unknown variable representing how many packs Maria bought.
- Cost per pack (\\$6): Corresponds to the coefficient 6.
- Service fee (\\$18): The fixed fee added to all purchases.
- Total spent (\\$72): The total amount Maria paid.

By translating the narrative into the equation:

$$6x + 18 = 72$$

we can now proceed to solve for x.

Solving the Word Problem Step-by-Step

Step 1: Set up the equation

As described, the total amount spent equals the cost of all packs plus the fixed fee:

$$6x + 18 = 72$$

Step 2: Isolate the variable term

Subtract the fixed fee from both sides:

$$6x + 18 - 18 = 72 - 18$$

which simplifies to:

$$6x = 54$$

Step 3: Solve for x

Divide both sides by 6:

$$x = 54 \div 6$$

$$x = 9$$

Interpretation: Maria bought 9 packs of bottled water.

Conclusion and Real-World Application

This example demonstrates how an algebraic equation can be directly tied to a real-world scenario, such as shopping. Understanding the context helps students visualize the problem, making it easier to identify variables and set up the correct equation. Moreover, it shows that real-life problems often involve combining variable costs with fixed fees or charges, a common situation in various purchasing activities.

Additional Examples of Purchase-Related Word Problems

To deepen understanding, here are some more examples illustrating how to craft similar problems around different equations.

- **Example 1:** A bookstore sells notebooks at \\$4 each. There is a one-time registration fee of \\$10. If a student spends \\$38 on notebooks and registration, how many notebooks did they buy?
- **Example 2:** A pizza place charges \\$8 per pizza plus a delivery fee of \\$5. If the total bill was \\$29, how many pizzas did the customer order?
- **Example 3:** A gym charges a membership fee of \\$50 plus \\$15 for each personal training session. If a member paid \\$95 in total, how many sessions did they attend?

These examples follow the same pattern of translating real-world scenarios into algebraic equations, emphasizing the importance of context in understanding and solving problems.

Importance of Context in Teaching Algebra

Using real-life scenarios to illustrate algebraic equations makes the subject more accessible and engaging. It helps students see the relevance of mathematics in everyday life, encouraging critical thinking and problem-solving skills.

Benefits include:

- Improved comprehension of variables and constants.
- Enhanced ability to translate words into algebraic expressions.
- Greater motivation to learn math through relatable situations.
- Development of critical thinking and reasoning skills.

Tips for Creating Effective Word Problems

When designing word problems based on equations like $6x + 18 = 72$, consider the following tips:

- Keep the context simple and relatable.
- Clearly identify what each part of the equation represents.

- Include realistic numbers and scenarios.
- Encourage students to visualize the problem before solving.
- Provide step-by-step guidance to reinforce understanding.

Conclusion

Transforming the algebraic equation $6x + 18 = 72$ into a real-world word problem is a valuable educational strategy that bridges the gap between abstract mathematics and everyday experiences. By contextualizing the problem within a shopping scenario, students can better grasp the concepts of variables, coefficients, and constants. This approach not only enhances problem-solving skills but also fosters a deeper appreciation for the relevance of algebra in daily life. Whether used in classroom instruction or self-study, developing and solving such problems is fundamental to mastering algebraic thinking and application.

Meta Description:

Learn how to craft a real-world word problem from the algebraic equation $6x + 18 = 72$. Discover step-by-step guidance and practical examples to improve problem-solving skills in mathematics.

Frequently Asked Questions

A shop sells notebooks for \$6 each. If you buy some notebooks and pay \$72 total, how many notebooks did you purchase?

Let the number of notebooks be x . The equation is $6x + 18 = 72$, which simplifies to $6x = 54$, so $x = 9$. You purchased 9 notebooks.

Julia bought a certain number of pens at \$6 each. After paying a fixed fee of \$18 for shipping, her total bill was \$72. How many pens did she buy?

Let x be the number of pens. The equation is $6x + 18 = 72$. Subtracting 18 from both sides gives $6x = 54$, so $x = 9$. Julia bought 9 pens.

A bookstore charges \$6 for each bookmark. If a customer pays \$72 total, including a fixed service fee of \$18, how many bookmarks did they buy?

Let x be the number of bookmarks. The equation is $6x + 18 = 72$. Subtracting 18 yields $6x = 54$, so x

= 9. The customer bought 9 bookmarks.

A farmer sells apples for \$6 per basket. After a fixed transportation fee of \$18, the total earning from a sale was \$72. How many baskets of apples did the farmer sell?

Let x be the number of baskets. The equation is $6x + 18 = 72$. Subtract 18 from both sides to get $6x = 54$, then $x = 9$. The farmer sold 9 baskets.

A student spends \$6 on each textbook. Including a fixed registration fee of \$18, their total expenses amount to \$72. How many textbooks did they buy?

Let x be the number of textbooks. The equation is $6x + 18 = 72$. Subtracting 18 gives $6x = 54$, so $x = 9$. The student bought 9 textbooks.

A company charges \$6 per hour for consulting services. If the total bill, including an initial setup fee of \$18, is \$72, how many hours of consulting did the client receive?

Let x be the number of hours. The equation is $6x + 18 = 72$. Subtracting 18 from both sides gives $6x = 54$, so $x = 9$. The client received 9 hours of consulting.

A vending machine sells drinks for \$6 each. After paying an \$18 service charge, a customer paid \$72 in total. How many drinks did they purchase?

Let x be the number of drinks. The equation is $6x + 18 = 72$. Subtracting 18 yields $6x = 54$, so $x = 9$. The customer bought 9 drinks.

A bakery sells muffins for \$6 each. Including a fixed delivery fee of \$18, the total bill was \$72. How many muffins did the customer order?

Let x be the number of muffins. The equation is $6x + 18 = 72$. Subtract 18 from both sides to get $6x = 54$, so $x = 9$. The customer ordered 9 muffins.

Additional Resources

Given The Equation $6x + 18 = 72$:Part A: Write A Short Word Problem About A Purchase Made To Illustrate

Introduction

Mathematics often finds its most practical applications in the form of real-world problems, especially those involving everyday transactions like purchases. At the heart of many algebraic concepts is the simple yet powerful linear equation, which models relationships between variables. One such fundamental equation is:

$$6x + 18 = 72$$

This equation, while seemingly straightforward, encapsulates a range of mathematical principles including algebraic manipulation, problem-solving, and contextual interpretation. To fully appreciate its significance, it's beneficial to explore how this equation can be translated into a real-life scenario—a word problem involving a purchase—that not only clarifies the abstract formula but also demonstrates its utility in everyday contexts.

This article aims to dissect the process of creating such a word problem, providing a comprehensive guide that aligns with educational standards and analytical rigor. We will analyze the equation, craft a relevant scenario, and explore the pedagogical implications of integrating word problems into mathematical learning.

The Core Equation: A Mathematical Breakdown

Before translating the equation into a real-world context, it's essential to understand its mathematical structure:

$$6x + 18 = 72$$

- $6x$: Represents a variable component, often associated with the total cost or quantity multiplied by a unit price or rate.
- $+ 18$: A fixed amount added to the variable component, possibly representing additional charges, fees, or initial costs.
- $= 72$: The total amount, which could be a total cost, sum, or target value.

Rearranging the equation to solve for x :

$$6x + 18 = 72$$

Subtract 18 from both sides:

$$6x = 54$$

Divide both sides by 6:

$$x = 9$$

This calculation indicates that $x = 9$ is the unknown quantity or unit price that, when multiplied by 6 and added to 18, results in a total of 72.

Crafting a Real-World Word Problem

The key to making the mathematical concept accessible is framing it within a relatable scenario. For

this purpose, let's consider a purchase involving multiple items, unit costs, and additional charges.

Drafting the Scenario

Suppose Jane wants to buy several notebooks and a set of pens. Each notebook costs a certain amount, and she also pays a fixed fee for a shopping bag. If the total amount she spends is \$72, and the combined cost of the notebooks and fees can be modeled by the equation $6x + 18 = 72$, what is the cost of each notebook?

Developing the Word Problem

Part A: The Purchase Scenario

"Jane is shopping for school supplies. She plans to buy several notebooks, each costing the same amount. Additionally, she must pay a fixed fee for a shopping bag. If the total amount Jane spends is \$72, and the total cost of notebooks plus the shopping bag fee can be expressed as $6x + 18$, where x is the cost of one notebook, what is the cost of each notebook?"

This problem effectively uses the equation to mirror the real-world situation:

- The term $6x$ corresponds to the total cost of six notebooks (assuming she buys six notebooks).
- The $+ 18$ represents the fixed fee for the shopping bag.
- The total \$72 is the overall amount spent.

Analytical Dissection of the Word Problem

Identifying Variables and Constants

- Variable: x (cost of one notebook)
- Number of notebooks: 6 (implied by the coefficient of x)
- Fixed fee: 18 (cost of the shopping bag)
- Total expenditure: 72

Assumptions and Clarifications

- Jane buys exactly six notebooks.
- The cost per notebook is the same.
- The fixed fee is constant, regardless of the number of notebooks.
- The total spent is inclusive of all costs.

Solving the Word Problem

Using the equation:

$$6x + 18 = 72$$

Solving for x :

1. Subtract 18 from both sides:

$$6x = 54$$

2. Divide both sides by 6:

$$x = 9$$

Interpretation: Each notebook costs \\$9.

This straightforward solution demonstrates how the algebraic equation directly models a real-world purchase scenario.

Extending the Scenario: Additional Context and Variations

While the core problem is simple, educators and reviewers might consider extending or modifying the scenario to increase complexity or relevance:

- Variation 1: If Jane wants to buy 8 notebooks instead of 6, what would be the total cost if the unit price remains \\$9?

Solution: Total = $6x + 18$ becomes $8x + 18$, which equals $8 \cdot 9 + 18 = 72 + 18 = \126 .

- Variation 2: If the fixed fee increases to \\$24, and the total is still \\$72, what is the price per notebook?

Equation: $6x + 24 = 72 \rightarrow 6x = 48 \rightarrow x = \8 .

These variations demonstrate the flexibility of the algebraic model in accommodating different real-world situations.

Pedagogical Significance of Word Problems in Mathematical Education

Bridging Abstract Algebra and Practical Application

Word problems serve as a vital pedagogical tool because they bridge the gap between abstract formulas and tangible experiences. They help students:

- Develop contextual understanding of variables and constants.
- Recognize the relevance of algebra in everyday life.
- Enhance problem-solving skills by translating real-world scenarios into equations.

Critical Thinking and Analytical Skills

Creating and solving word problems encourage critical thinking. Students must:

- Identify what the problem is asking.
- Translate the scenario into mathematical expressions.
- Manipulate equations to find solutions.
- Interpret results within the context.

Assessment and Reinforcement

Instructors can assess comprehension by asking students to craft their own word problems based on given equations, fostering deeper understanding and creativity.

Broader Implications and Applications

The process of translating algebraic equations into real-world contexts extends beyond classroom exercises. It underpins various fields such as:

- Finance: Calculating interest, budgeting, or loan payments.
- Science: Modeling relationships between variables.
- Business: Pricing strategies and profit calculations.
- Engineering: System modeling and optimization.

The example of $6x + 18 = 72$ exemplifies how a simple algebraic equation can be a powerful tool for solving practical problems, emphasizing the importance of contextual understanding.

Conclusion

The exploration of the equation $6x + 18 = 72$ through the lens of a word problem about a purchase not only illustrates the fundamental principles of algebra but also underscores the importance of contextualizing mathematical concepts for effective learning.

By framing the equation as a real-world scenario—such as Jane’s shopping trip—students and educators can appreciate the relevance and utility of algebra in everyday life. This approach fosters deeper engagement, promotes critical thinking, and builds foundational skills that extend well beyond the classroom.

In summary:

- The equation models a scenario with a fixed fee and a variable cost per item.
- The problem-solving process involves standard algebraic manipulations.
- The scenario can be adapted or extended to increase complexity.
- Word problems are essential for connecting abstract math to real-world applications.

This case exemplifies how mathematics functions as a tool for understanding and navigating the world, making learning both meaningful and practical.

End of Article

Given The Equation $6x + 18 = 72$ Part A Write A Short Word Problem About A Purchase Made To Illustrate

Given The Equation $6x + 18 = 72$ Part A Write A Short Word Problem About A Purchase Made To Illustrate

Related Articles

- [HELP PLEASEGregor Mendel Finished His Pea Plant Experiments In 1863 And Published His Results In 1866.](#)
- [How Did The National Capital Move To Washington, DC?A\) It Was A Request Of George Washington.B\) It Was](#)
- [In A Lab Experiment, A Population Of 300 Bacteria Is Able To Double Every Hour. Which Equation Matches](#)

[Back to Home](#)