

The Total Cost Of A Tie And A Pair Of Pants Was \$87.18. If The Price Of The Tie Was \$2.12 Less Than The

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When shopping for fashion essentials, understanding how to calculate total costs and identify individual item prices can be quite useful. For instance, if you know the combined price of a tie and a pair of pants is \$87.18, and the tie costs \$2.12 less than the pair of pants, you can determine the exact prices of each item with some simple algebra. This article explores how to approach such problems, provides step-by-step solutions, and offers insights into related budgeting tips for clothing shopping.

Understanding the Problem

Before diving into calculations, it's essential to understand the problem's key information:

- The total cost of a tie and a pair of pants combined is \$87.18.
- The tie's price is \$2.12 less than the pants' price.

This setup allows us to formulate an equation that helps find the individual prices.

Setting Up the Equations

Defining Variables

Let's assign variables to the unknowns:

- Let P represent the price of the pair of pants.
- Let T represent the price of the tie.

Given the problem:

- The total cost: $T + P = \$87.18$
- The relationship between tie and pants: $T = P - \$2.12$

Formulating the Equation

Using the second statement, substitute T in the first equation:

- $(P - 2.12) + P = 87.18$

Simplify:

$$- 2P - 2.12 = 87.18$$

Now, solve for P.

Solving for the Price of the Pants

Step-by-Step Calculation

Starting with the simplified equation:

$$- 2P - 2.12 = 87.18$$

Add 2.12 to both sides:

$$- 2P = 87.18 + 2.12$$

$$- 2P = 89.30$$

Divide both sides by 2:

$$- P = 89.30 / 2$$

$$- P = 44.65$$

So, the price of the pants is \$44.65.

Calculating the Price of the Tie

Recall:

$$- T = P - 2.12$$

Substitute $P = 44.65$:

$$- T = 44.65 - 2.12$$

$$- T = 42.53$$

Thus, the tie costs \$42.53.

Summary of the Item Prices

Item	Price
-----	-----

| Pair of Pants | \$44.65 |

| Tie | \$42.53 |

Total check:

- $\$44.65 + \$42.53 = \$87.18$, confirming our calculations.

Additional Tips for Budgeting and Shopping

How to Use Similar Techniques in Shopping

Understanding how to set up and solve algebraic equations can be very helpful when:

- Comparing prices of multiple items.
- Planning budgets for clothing shopping.
- Finding discounts or deals that involve price differences.

Tips for Cost-Effective Shopping

- Always compare prices to find the best deal.
- Look for items that are on sale or have discounts.
- Calculate the unit price when buying in bulk.
- Budget your shopping list based on known prices to avoid overspending.

Common Variations and Extensions

What if the Total Cost Changes?

Suppose the total cost of the tie and pants changes, or the difference in price between the two items varies, you can adjust the equations accordingly. For example:

- If the total cost is \$90.00, and the price difference remains \$2.12.
- Or if the tie costs \$3 less than the pants, modify the equation $T = P - 3$.

Applying the Method to Other Scenarios

This algebraic approach can be extended to:

- Buying multiple items with known total costs and differences.
- Budgeting for outfits with multiple components.
- Estimating costs when given partial price information.

Conclusion

Calculating the individual prices of items based on total costs and known differences is a fundamental algebraic skill that proves useful in everyday shopping and budgeting. In our example, the tie costs \$42.53, and the pair of pants costs \$44.65, summing up to the total of \$87.18. Whether you are shopping for fashion items or managing expenses, mastering such problem-solving techniques can help you make informed financial decisions and optimize your spending.

Remember, setting up the right equations and following a systematic approach ensures accuracy and confidence in solving similar problems. Keep practicing with different scenarios to strengthen your algebra skills and enhance your budgeting strategies.

Meta Description:

Learn how to determine the prices of a tie and a pair of pants when their total cost is \$87.18 and the tie costs \$2.12 less than the pants. Step-by-step algebra solutions and budgeting tips included.

Frequently Asked Questions

What is the total cost of the tie and the pair of pants?

The total cost is \$87.18.

If the price of the tie was \$2.12 less than the price of the pants, how can we determine the individual prices?

Let the price of the pants be x dollars; then, the tie's price is $x - 2.12$ dollars. Using the total cost of \$87.18, we can set up the equation: $(x - 2.12) + x = 87.18$.

What is the equation to find the price of the pants?

The equation is $2x - 2.12 = 87.18$, which simplifies to $2x = 87.18 + 2.12$.

How do you solve for the price of the pants in this problem?

Add 2.12 to 87.18 to get 89.30, then divide by 2 to find x : $x = 89.30 / 2 = 44.65$. So, the pants cost \$44.65.

What is the price of the tie based on the calculations?

The tie's price is $x - 2.12 = 44.65 - 2.12 = \42.53 .

Are the prices of the tie and pants reasonable based on the

total cost?

Yes, with the tie costing approximately \$42.53 and the pants \$44.65, their total is about \$87.18, which aligns with the given total.

What mathematical concept is used to solve this problem?

This problem uses algebra, specifically setting up and solving a linear equation.

Can this problem be solved using a different method?

While algebra is the most straightforward, you could also use substitution or proportional reasoning, but algebra provides a clear and efficient solution.

What real-world scenarios does this problem resemble?

This problem resembles shopping discounts, price comparisons, and budgeting where items are priced relative to each other and total expenditure is known.

Additional Resources

The total cost of a tie and a pair of pants was \$87.18. If the price of the tie was \$2.12 less than the...

This statement sets the stage for a classic algebraic problem that intertwines basic mathematics with real-world shopping scenarios. While at first glance, the problem appears straightforward—finding the individual prices of two clothing items—the underlying process involves understanding relationships between variables, setting up equations, and solving them systematically. Such problems are foundational in developing quantitative reasoning skills and are often encountered in various contexts, from budgeting to retail analysis.

In this comprehensive article, we will analyze this problem step-by-step, exploring not only the solution but also the broader implications, applications, and related concepts. We aim to offer an in-depth exploration suitable for readers interested in mathematical problem-solving, financial literacy, or retail economics.

Understanding the Problem: Breaking Down the Statement

The Core Information

The problem states:

> The total cost of a tie and a pair of pants was \$87.18. If the price of the tie was \$2.12 less than the...

While the phrase is incomplete, it hints at a comparison between the prices of two items—most probably a tie and a pair of pants—and their total combined cost. The key points include:

- The combined cost (tie + pants) = \$87.18
- The price of the tie is less than the price of the pants by \$2.12

This setup is typical of algebraic word problems where relationships between variables are expressed through equations.

Assumptions and Clarifications

Given the fragment, standard assumptions include:

- The items involved are the tie and the pants.
- The "less than" comparison applies to the tie's price relative to the pants' price.
- The total cost is for one tie and one pair of pants.
- Prices are in dollars, and decimal precision is to two decimal places.

Formulating the Mathematical Model

Defining Variables

To proceed systematically, assign variables:

- Let T = price of the tie
- Let P = price of the pants

From the problem, the key relationship is:

$$T = P - 2.12$$

And the total cost:

$$T + P = 87.18$$

Establishing Equations

Using the above, we can form two equations:

1. $T = P - 2.12$
2. $T + P = 87.18$

Substituting equation 1 into equation 2:

$$(P - 2.12) + P = 87.18$$

Simplify:

$$2P - 2.12 = 87.18$$

Solving the Equations: Step-by-Step Approach

Step 1: Isolate P

Add 2.12 to both sides:

$$2P = 87.18 + 2.12$$

$$2P = 89.30$$

Divide both sides by 2:

$$P = \frac{89.30}{2}$$

$$P = 44.65$$

Step 2: Find T

Recall:

$$T = P - 2.12$$

Substitute $P = 44.65$:

$$T = 44.65 - 2.12$$

$$T = 42.53$$

Final Prices:

- Price of the pants: \$44.65
- Price of the tie: \$42.53

Check the total:

$$\backslash [44.65 + 42.53 = 87.18 \backslash]$$

The sum matches the total cost, confirming the solution's correctness.

Analytical Insights and Broader Context

The Significance of Algebraic Modeling in Real-World Situations

This problem exemplifies how algebraic techniques can be employed to solve everyday financial questions. Whether budgeting for clothing, calculating discounts, or analyzing retail pricing strategies, understanding how to set up and solve such equations is invaluable.

Key takeaways:

- Variables can represent unknown quantities.
- Relationships between variables can be translated into equations.
- Substitution is a powerful method for solving systems of equations.
- Validation through back-substitution ensures accuracy.

Implications in Retail and Consumer Behavior

Understanding pricing relationships has practical implications:

- Pricing Strategies: Retailers often set prices by considering the relative value of items, discounts, or bundle offers.
- Consumer Decision-Making: Shoppers often compare prices, especially when discounts are involved, making algebra useful for calculating the actual savings or costs.
- Budgeting: Knowing how to derive individual item prices from total costs helps consumers plan expenditures effectively.

Extensions and Variations of the Problem

While this problem involves straightforward algebra, variations can introduce complexity:

- Multiple items with different relationships.

- Percent-based discounts or markups.
- Taxes and additional fees.
- Multiple quantities of each item.

Engaging with such extensions enhances problem-solving skills and economic literacy.

Practical Applications of Similar Mathematical Problems

Personal Finance and Budgeting

Individuals often need to determine the cost of individual items from total receipts, especially when discounts or price differences are involved. Algebraic modeling enables accurate budgeting and spending analysis.

Retail Pricing Analysis

Businesses analyze pricing strategies by understanding how different costs and discounts influence total sale amounts. Setting optimal prices requires understanding relationships similar to those in this problem.

Economics and Market Analysis

Economists model consumer preferences and pricing dynamics using similar algebraic frameworks, helping predict market behavior and inform policy decisions.

Conclusion: The Power of Algebra in Everyday Life

The problem of determining the individual prices of a tie and a pair of pants from their total cost and price difference exemplifies the practical application of algebra. Beyond mere numbers, this exercise underscores how mathematical reasoning is embedded in daily activities—shopping, budgeting, and economic analysis.

By systematically setting up variables, forming equations, and solving them, individuals can make informed decisions, optimize their expenditures, and understand market behaviors. Mastery of such fundamental techniques lays the groundwork for tackling more complex problems across disciplines,

from finance to engineering.

In essence, simple algebraic problems like this serve as stepping stones toward greater financial literacy, critical thinking, and problem-solving prowess—skills essential in navigating an increasingly quantitative world.

In Summary:

- The total cost of the tie and pants is \$87.18.
- The tie costs \$2.12 less than the pants.
- Using algebra, the price of the pants is \$44.65, and the tie costs \$42.53.
- These calculations demonstrate the practical utility of algebra in everyday financial decisions and retail analysis.

Understanding such problems enhances not only mathematical proficiency but also empowers consumers and professionals to analyze costs effectively, make better purchasing decisions, and develop strategic pricing models.

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