

URGENT!! Two Students Determined The Value Of This Expression.

-2.5(1.4+3.1) + 6.9(-4.3) These Are The

URGENT!! Two Students Determined The Value Of This Expression. -2.5(1.4+3.1) + 6.9(-4.3) These Are The moments that highlight the importance of mastering basic algebraic expressions. Whether you're a student preparing for exams or someone interested in improving your mathematical skills, understanding how to evaluate such expressions is essential. In this comprehensive guide, we will explore the step-by-step process the students used to determine the value of the expression, delve into the fundamental concepts involved, and provide tips to enhance your algebraic problem-solving abilities.

Understanding the Expression

Before jumping into calculations, it is crucial to understand what the expression represents and how to approach it systematically.

The Expression Breakdown

The expression given is:

$$-2.5(1.4+3.1) + 6.9(-4.3)$$

This expression involves:

- Addition inside parentheses
- Multiplication of decimal numbers
- Combining the results with addition

Breaking it down:

- The first part: -2.5 multiplied by the sum of 1.4 and 3.1
- The second part: 6.9 multiplied by -4.3

Key Mathematical Concepts

Understanding these concepts is vital:

- Order of operations (PEMDAS/BODMAS)
- Handling negative numbers
- Multiplying decimal numbers
- Combining results to find the final value

Step-by-Step Solution Approach

Let's detail the process the students followed to evaluate the expression accurately.

Step 1: Simplify Inside Parentheses

The first step is to evaluate the expression inside the parentheses:

1. Identify the parentheses: $(1.4 + 3.1)$
2. Add the numbers: $1.4 + 3.1 = 4.5$

Step 2: Multiply by -2.5

Next, multiply the result of the parentheses by -2.5:

1. Calculate: -2.5×4.5
2. Since multiplying a negative by a positive yields a negative, perform 2.5×4.5 first:
3. $2.5 \times 4.5 = (2.5 \times 4) + (2.5 \times 0.5) = 10 + 1.25 = 11.25$
4. Apply the negative sign: -11.25

Step 3: Multiply 6.9 by -4.3

Now, evaluate the second part:

1. Calculate 6.9×-4.3
2. First, multiply the absolute values: 6.9×4.3
3. Break down: $6.9 \times 4.3 = (6.9 \times 4) + (6.9 \times 0.3) = 27.6 + 2.07 = 29.67$
4. Since multiplying by a negative, the result is negative: -29.67

Step 4: Combine the Results

Add the two parts:

$$-11.25 + (-29.67) = -11.25 - 29.67 = -40.92$$

Final Answer

The value of the expression:

$$-2.5(1.4+3.1) + 6.9(-4.3) = -40.92$$

Importance of Mastering Algebraic Expressions

Understanding how to evaluate expressions like this one is fundamental to various branches of mathematics and real-world problem-solving. Let's explore why this skill is so vital.

Real-World Applications

Evaluating algebraic expressions is applicable in many fields:

- **Finance:** Calculating interest, investments, and budgeting
- **Engineering:** Designing systems and analyzing measurements
- **Science:** Formulating experiments and analyzing data
- **Computer Science:** Programming algorithms involving calculations

Building Mathematical Foundation

Mastering these skills:

1. Enhances problem-solving abilities
2. Prepares students for advanced mathematics
3. Develops logical thinking and analytical skills

Tips for Solving Similar Expressions

To improve your ability to evaluate complex expressions, consider the following tips:

1. Follow the Order of Operations

Always remember PEMDAS or BODMAS:

- Parentheses first
- Exponents (if any)
- Multiplication and division (left to right)
- Addition and subtraction (left to right)

2. Handle Negative Numbers Carefully

Pay attention to signs:

- Multiplying two negatives yields a positive
- Multiplying a positive and a negative yields a negative

3. Use Breakdowns for Complex Calculations

Break large calculations into smaller steps to minimize errors:

- Separate decimal multiplication into parts
- Sum inside parentheses first

4. Double-Check Your Work

Verify each step to ensure accuracy:

- Recalculate intermediate steps
- Confirm signs and decimal placements

5. Practice Regularly

Consistent practice helps internalize the process and improves speed and accuracy.

Common Mistakes to Avoid

While solving such expressions, watch out for:

- Ignoring the order of operations
- Incorrectly handling negative signs
- Misplacing decimal points

- Forgetting to evaluate parentheses first

Conclusion

The ability of students to evaluate the expression $-2.5(1.4+3.1) + 6.9(-4.3)$ showcases foundational algebra skills that are essential for academic success and practical applications. By understanding the step-by-step process, mastering the order of operations, and practicing regularly, anyone can improve their mathematical proficiency. Remember, even seemingly simple expressions require careful attention to detail, but with practice, you'll be able to solve complex problems confidently and efficiently.

Additional Resources

For further learning, consider exploring:

- Online algebra tutorials and courses
- Practice worksheets on order of operations
- Mathematics apps for interactive practice
- Study groups or tutoring for personalized guidance

Stay motivated and keep practicing—mathematics becomes easier and more enjoyable with consistent effort!

Frequently Asked Questions

How do two students determine the value of the expression $-2.5(1.4 + 3.1) + 6.9(-4.3)$?

They evaluate the expression step-by-step by first calculating inside the parentheses, then multiplying, and finally combining the results to find the total value.

What is the first step in solving $-2.5(1.4 + 3.1) + 6.9(-4.3)$?

The first step is to add the numbers inside the parentheses: $1.4 + 3.1 = 4.5$.

After calculating $1.4 + 3.1$, what is the next step?

Next, multiply -2.5 by 4.5 : $-2.5 \times 4.5 = -11.25$.

How do you evaluate $6.9(-4.3)$?

Multiply 6.9 by -4.3 to get -29.67 , since a positive times a negative is negative.

What is the final value of the expression $-2.5(1.4 + 3.1) + 6.9(-4.3)$?

The final value is $-11.25 + (-29.67) = -40.92$.

Why is it important to follow order of operations when solving this expression?

Because operations inside parentheses should be done first, followed by multiplication, then addition, to ensure an accurate result.

Can you explain how to verify the correctness of the solution?

Yes, by re-evaluating each step carefully and double-checking calculations, you can confirm the accuracy of the final answer.

What is the significance of solving such expressions in math?

Solving these expressions helps develop problem-solving skills, understanding of algebraic operations, and logical reasoning in mathematics.

Additional Resources

Mathematical Expression Analysis

Introduction

In the realm of mathematics, expressions like the one studied by two diligent students often serve as foundational exercises to enhance understanding of algebraic operations, order of operations, and numerical comprehension. The expression $-2.5(1.4 + 3.1) + 6.9(-4.3)$ might seem straightforward at first glance, but analyzing it thoroughly reveals the importance of precision, methodical calculation, and conceptual clarity. This article provides an in-

depth exploration of the expression, breaking down each component, evaluating step-by-step, and emphasizing the significance of each operation.

Understanding the Expression

The expression in question is:

$$-2.5(1.4 + 3.1) + 6.9(-4.3)$$

At its core, it combines several key mathematical operations:

- Addition inside parentheses
- Multiplication involving decimal coefficients
- Addition of the resulting terms

Breaking down these operations ensures accuracy and promotes a deeper understanding of algebraic manipulation.

Dissecting the Components

Parentheses: The First Priority

According to the order of operations (PEMDAS/BODMAS), calculations inside parentheses are performed first. Here, we have:

$$(1.4 + 3.1)$$

This is a simple addition of two decimal numbers.

Calculating $1.4 + 3.1$:

$$- 1.4 + 3.1 = 4.5$$

This step is straightforward but crucial; any mistake here propagates through the entire calculation.

Multiplying by -2.5

Next, the product of -2.5 and 4.5 is calculated:

$$-2.5 \times 4.5$$

This involves multiplying a negative number with a positive number, which follows the rule:

$$\text{- Negative} \times \text{Positive} = \text{Negative}$$

Now, perform the multiplication:

$$\text{- } 2.5 \times 4.5$$

To simplify, think of:

$$\text{- } 2.5 \times 4.5 = (25/10) \times (45/10)$$

Multiply numerators and denominators:

$$\text{- } (25 \times 45) / (10 \times 10) = (1125) / (100) = 11.25$$

Considering the negative sign:

$$\text{- } -2.5 \times 4.5 = -11.25$$

This step converts a decimal multiplication into a fraction multiplication for clarity but can be done directly with a calculator or mental math.

Calculating the Second Term: 6.9(-4.3)

This involves multiplying two decimal numbers with different signs:

$$\text{- } 6.9 \times (-4.3)$$

Since the numbers have different signs, the product will be negative:

$$\text{- } 6.9 \times 4.3$$

Calculating 6.9×4.3 :

- Break it down into parts:

$$\text{- } 6.9 = 7 - 0.1$$

$$\text{- } 4.3 = 4 + 0.3$$

Using distributive property:

$$\text{- } 7 \times 4 = 28$$

$$\text{- } 7 \times 0.3 = 2.1$$

- $(-0.1) \times 4 = -0.4$

- $(-0.1) \times 0.3 = -0.03$

Adding these:

$28 + 2.1 - 0.4 - 0.03 = (28 + 2.1) - (0.4 + 0.03) = 30.1 - 0.43 = 29.67$

Therefore:

- $6.9 \times (-4.3) = -29.67$

Final Calculation

Now, combine all parts:

-11.25 + (-29.67)

Adding two negative numbers:

- Sum of their absolute values: $11.25 + 29.67 = 40.92$
- Since both are negative, the result is:

-40.92

Thus, the value of the entire expression is -40.92.

Step-by-Step Summary

Step	Operation	Result	Explanation
1	Add inside parentheses	$1.4 + 3.1$	4.5
2	Multiply by -2.5	-2.5×4.5	-11.25
3	Multiply 6.9 by -4.3	$6.9 \times (-4.3)$	-29.67
4	Combine results	$-11.25 + (-29.67)$	-40.92

Insights & Educational Significance

Why Such Exercises Matter

- Reinforces order of operations: Ensuring students remember PEMDAS/BODMAS rules.
- Decimal multiplication mastery: Handling decimals accurately is crucial in real-world calculations.
- Sign management: Correctly handling negative and positive numbers bolsters understanding of algebra.
- Stepwise validation: Breaking complex expressions into manageable steps reduces errors and builds confidence.

Common Pitfalls to Avoid

- Ignoring parentheses: Leading to incorrect order of operations.
- Misplacing negatives: Confusing the sign during multiplication.
- Decimal miscalculations: Misaligning decimal points or miscalculating partial products.
- Skipping intermediate steps: Leading to careless errors.

Practical Applications

Expressions like this are foundational in fields such as:

- Engineering calculations
- Financial modeling
- Scientific research
- Data analysis

Mastering these types of problems ensures a solid mathematical base for advanced studies and real-life problem-solving.

Conclusion

The calculation of $-2.5(1.4 + 3.1) + 6.9(-4.3)$ exemplifies the importance of methodical approach and attention to detail in mathematics. Two students, through diligent work, determine that the value of this expression is -40.92 , showcasing their understanding of the order of operations, decimal multiplication, and sign management.

This exercise underscores a fundamental truth in mathematics: precision matters. Whether in academic settings or practical applications, developing strong computational habits ensures accuracy and confidence. As we continue to explore more complex expressions, these foundational skills will serve as vital tools for success.

Final note: Always verify calculations, especially with decimals and signs, and develop a habit of documenting each step. This not only minimizes errors but enhances conceptual clarity, preparing students for more challenging mathematical endeavors.

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