

Evaluate $6a + 4b - 3c$ When $A=4$, $B=7$, And $C=-2$ (a) 26 (b) 16 (c) 46 (d) 58

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Understanding how to evaluate algebraic expressions is a fundamental skill in mathematics. In this article, we will explore how to evaluate the expression $6a + 4b - 3c$ given specific values for variables a , b , and c . Using the provided values where $A=4$, $B=7$, and $C=-2$, we will determine the correct answer from the multiple-choice options: (a) 26, (b) 16, (c) 46, and (d) 58. This process involves substituting the given values into the expression and performing arithmetic operations step-by-step.

Understanding the Expression

Before performing any calculations, it's essential to understand the structure of the algebraic expression:

Expression: $6a + 4b - 3c$

This expression involves three variables: a , b , and c , each multiplied by a coefficient. The evaluation process requires substituting the specific values of these variables into the expression and simplifying the result.

Given Values for Variables

The problem provides the following values:

- $a = 4$
- $b = 7$
- $c = -2$

Note that c is negative, which will influence the calculation when multiplied by -3 .

Step-by-Step Calculation

To evaluate the expression, follow these steps:

1. Substitute the values into the expression

Replace each variable with its corresponding value:

6a becomes 6×4

4b becomes 4×7

-3c becomes $-3 \times (-2)$

2. Calculate each term

- $6 \times 4 = 24$
- $4 \times 7 = 28$
- $-3 \times (-2) = 6$ (since a negative times a negative yields a positive)

3. Sum the terms

Now, add the first two results and then subtract the third:

$$24 + 28 + 6 = 58$$

(Note: Since the last term is added, the subtraction in the original expression becomes addition because of the negative sign before 3c.)

Final Result and Correct Answer

The evaluated value of the expression $6a + 4b - 3c$ with the given variables is 58.

Therefore, the correct choice from the options provided is:

(d) 58

Summary of the Evaluation Process

- Substituted the values into the expression
- Calculated each term separately
- Carefully handled the negative sign before c
- Added the results to find the final value

Key Takeaways for Evaluating Algebraic Expressions

- Always substitute the given values accurately
- Parentheses or negative signs should be handled carefully
- Follow the order of operations (PEMDAS/BODMAS)
- Double-check calculations to avoid errors

Additional Tips for Similar Problems

- Break down complex expressions into smaller parts
- Use a calculator for complex calculations to minimize errors
- Practice similar problems to build confidence and speed
- Understand how negative numbers affect the calculations

Practice Problem

Evaluate the following expression with different values:

Expression: $3x - 2y + z$

Values: $x=5$, $y=3$, $z=-4$

Solution:

1. Substitute: $3 \times 5 - 2 \times 3 + (-4)$
2. Calculate: $15 - 6 - 4$
3. Final result: $15 - 6 - 4 = 5$

Answer: 5

By practicing similar problems, you will improve your skills in evaluating algebraic expressions and strengthen your overall math proficiency.

Conclusion

Evaluating algebraic expressions like $6a + 4b - 3c$ becomes straightforward once you understand how to substitute values and perform arithmetic operations systematically. In this example, with $a=4$, $b=7$, and $c=-2$, the evaluated result is 58, matching option (d). Mastery of these techniques is essential for success in algebra and subsequent mathematics courses.

Remember: Accuracy in substitution and careful calculation are key to solving algebraic problems efficiently. Keep practicing, and you'll become confident

in evaluating complex expressions quickly and correctly.

Frequently Asked Questions

What is the value of $6a + 4b - 3c$ when $A=4$, $B=7$, and $C=-2$?

The value is 58.

How do you evaluate the expression $6a + 4b - 3c$ given specific values for A , B , and C ?

Substitute the given values into the expression and perform the arithmetic:
 $64 + 47 - 3(-2) = 24 + 28 + 6 = 58$.

Which option correctly represents the result of $6a + 4b - 3c$ when $A=4$, $B=7$, $C=-2$?

Option (d) 58 is correct.

Is the answer 26, 16, 46, or 58 for the expression $6a + 4b - 3c$ with $A=4$, $B=7$, $C=-2$?

The correct answer is 58.

What is the process to evaluate $6a + 4b - 3c$ for $A=4$, $B=7$, $C=-2$?

Plug in the values: $64 + 47 - 3(-2)$. Calculate step-by-step: $24 + 28 + 6 = 58$.

Why is 58 the correct answer for the expression $6a + 4b - 3c$ with the given values?

Because substituting $A=4$, $B=7$, $C=-2$ into the expression results in 58 after calculation.

Can you verify the answer for $6a + 4b - 3c$ when $A=4$, $B=7$, $C=-2$?

Yes. Substituting the values gives $64 + 47 - 3(-2) = 24 + 28 + 6 = 58$, confirming the answer.

What are the key steps to evaluate $6a + 4b - 3c$ with $A=4$, $B=7$, $C=-2$?

First, substitute the values: 64, 47, and $-3(-2)$. Then, perform multiplication and addition/subtraction to arrive at 58.

Is the answer choice (a) 26, (b) 16, (c) 46, or (d) 58 correct for the given expression?

Yes, (d) 58 is the correct choice.

Additional Resources

Evaluate $6a + 4b - 3c$ When $A=4$, $B=7$, and $C=-2$ is a straightforward algebraic problem that involves substituting given values into an algebraic expression and simplifying to find the result. Such problems are fundamental in understanding how algebraic expressions work and how to manipulate variables to derive a specific value. This particular problem exemplifies the practical application of substitution, multiplication, addition, and subtraction within an algebraic context. In this review-oriented article, we will explore the process of evaluating the expression step-by-step, analyze the options provided, and discuss the importance of understanding such calculations in broader mathematical and real-world applications.

Understanding the Expression

The Algebraic Expression

The given algebraic expression is:

$$6a + 4b - 3c$$

This expression combines multiple terms involving different variables (a , b , c) with various coefficients (6, 4, -3). The task is to evaluate this expression when the variables are assigned specific values:

- $A = 4$
- $B = 7$
- $C = -2$

The key here is recognizing that the expression uses lowercase variables (a , b , c) whereas the given values are uppercase (A , B , C). Typically, in

algebra, variables are case-sensitive; however, in many educational contexts, uppercase and lowercase letters are used interchangeably unless specified otherwise. For the purpose of this problem, we will assume that the variables a , b , c are to be replaced with the values of A , B , C respectively.

Step-by-Step Evaluation

Substituting Values

The first step is substituting the given values into the expression:

- $a = 4$
- $b = 7$
- $c = -2$

Thus, the expression becomes:

$$6(4) + 4(7) - 3(-2)$$

Calculating Each Term

Now, perform the multiplication for each term:

- $6(4) = 24$
- $4(7) = 28$
- $-3(-2) = 6$

Note that multiplying two negatives results in a positive, which is a fundamental rule in mathematics.

Combining the Results

Next, combine all the computed values:

$$24 + 28 + 6$$

Add these together:

- $24 + 28 = 52$
- $52 + 6 = 58$

Therefore, the value of the expression when $A=4$, $B=7$, and $C=-2$ is 58.

Analysis of Answer Choices

The options provided are:

- (a) 26
- (b) 16
- (c) 46
- (d) 58

From our calculation, the correct answer is 58, which corresponds to option (d).

This confirms that the evaluation process is correct and that understanding how to substitute and simplify algebraic expressions is crucial for solving such problems accurately.

Why This Problem Matters

Educational Significance

- Reinforces substitution skills: The core skill here is replacing variables with known values.
- Develops arithmetic proficiency: Multiplication and addition are fundamental operations reinforced through such problems.
- Enhances understanding of algebraic expressions: Recognizing how different coefficients and variables interact is key to mastering algebra.

Practical Applications

Evaluating expressions like $6a + 4b - 3c$ has real-world relevance, such as:

- Calculating costs or profits where variables represent quantities or prices.
- Determining the outcome of formulas in physics, chemistry, or engineering.
- Developing problem-solving skills applicable in finance, data analysis, and computer programming.

Features and Pros/Cons of This Approach

Features:

- Clear step-by-step process makes it easy to follow.
- Reinforces fundamental algebraic operations.
- Demonstrates the importance of careful substitution and computation.

Pros:

- Simple and straightforward, suitable for learners at the beginner to intermediate level.
- Can be generalized to more complex expressions involving multiple variables and coefficients.
- Builds confidence in handling algebraic problems.

Cons:

- Assumes variables are case-sensitive and that uppercase and lowercase letters are interchangeable, which might not always be the case in more advanced math.
- Does not explore algebraic manipulation beyond substitution, such as factoring or expanding expressions.
- Limited complexity may not challenge advanced learners.

Conclusion

Evaluating the expression $6a + 4b - 3c$ when $A=4$, $B=7$, and $C=-2$ is a fundamental exercise in algebra that emphasizes substitution, multiplication, and addition. The calculated result, 58, aligns with the provided options, confirming the correctness of the approach. Mastering such problems is essential for building a strong foundation in algebra, which is vital for higher-level mathematics and numerous practical applications. Whether for academic purposes or real-world problem-solving, understanding how to evaluate expressions accurately enhances analytical skills and mathematical literacy. This problem serves as an excellent example of how straightforward calculations underpin more complex mathematical reasoning and decision-making processes.

In summary, the key takeaway from this evaluation is the importance of

meticulous substitution and arithmetic precision. As learners progress, they will encounter more complex expressions, but the fundamental principles demonstrated here—careful substitution, stepwise calculation, and verification—remain central to all algebraic problem-solving endeavors.

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