Evaluate The Expression For The Given Value Of The Variables. 0.9g - 2.1h G = 15, H=2

Evaluate The Expression For The Given Value Of The Variables. 0.9g - 2.1h G = 15, H=2

Understanding how to evaluate algebraic expressions with given variable values is a fundamental skill in mathematics. This process involves substituting specific numerical values for variables within an expression or equation and computing the result accordingly. In this article, we will explore step-by-step how to evaluate the expression 0.9g - 2.1h given the values G = 15 and H = 2. We will also discuss important concepts related to algebraic expressions, variable substitution, and the importance of accurate calculations.

Understanding the Expression: 0.9g - 2.1h

Before diving into the evaluation process, it is essential to understand the structure of the expression and the roles played by each variable.

Breaking Down the Expression

The expression 0.9g - 2.1h consists of two terms:

- 0.9g: The first term, which involves the variable g multiplied by 0.9.
- - 2.1h: The second term, which involves the variable h multiplied by 2.1, with a subtraction sign preceding it.

This expression is linear, meaning it involves variables raised to the first power and no products of variables or exponents.

Understanding the Variables G and H

The variables G and H are placeholders for numerical values. In this context:

- G = 15
- H = 2

These are specific values assigned to the variables, which allows us to compute the value of the entire expression.

Step-by-Step Evaluation Process

Evaluating an algebraic expression involves systematic substitution and calculation. Let's outline the steps:

Step 1: Write Down the Expression

The original expression is:

```plaintext
0.9g - 2.1h
```

Step 2: Substitute the Given Values

Replace g with 15 and h with 2:

```plaintext
0.9 15 - 2.1 2
```

Step 3: Perform the Multiplications

Calculate each term separately:

- 0.9 15:

$$
0.9 \times 15 = (0.9 \times 10) + (0.9 \times 5) = 9 + 4.5 = 13.5
$$

- 2.1 2:

$$
2.1 \times 2 = 4.2
$$

Step 4: Combine the Results

Subtract the second product from the first:

```plaintext
```

13.5 - 4.2 = 9.3
```

Thus, the evaluated value of the expression when G = 15 and H = 2 is 9.3.

---

# Additional Concepts Related to Evaluating Expressions

Understanding the process of evaluating expressions extends beyond this specific example. Here are some key concepts and tips to deepen your understanding.

## Variables and Constants

- Variables are symbols (like g and h) that represent unknown or changing values.
- Constants are fixed numerical values, such as 0.9 and 2.1 in the expression.

## Substitution and Evaluation

- Substitution involves replacing variables with their numerical values.
- Proper substitution ensures accurate calculations and understanding of the expression's value.

## Order of Operations

When evaluating expressions, adhere to the order of operations (PEMDAS/BODMAS):

1. Parentheses
2. Exponents
3. Multiplication and Division (left to right)
4. Addition and Subtraction (left to right)

In this case, only multiplication and subtraction are involved, so perform multiplications first, then subtraction.

## Handling Negative Signs

- Negative signs before terms indicate subtraction.
- Be cautious to maintain the correct sign during calculations.

---
```

Practical Applications of Evaluating Expressions

Evaluating expressions with given variable values is a critical skill across various fields:

- **Physics:** Calculating force, velocity, or energy based on variables.
- **Economics:** Determining profit or cost based on quantities and rates.
- **Engineering:** Computing stress, strain, or other parameters in systems.
- **Statistics:** Calculating expected values or probabilities.

In real-world scenarios, you often need to evaluate expressions to make informed decisions or predictions.

Common Mistakes to Avoid When Evaluating Expressions

While evaluating algebraic expressions, it's easy to make errors. Here are some common pitfalls and how to avoid them:

1. Incorrect Substitution

- Always double-check that you've replaced each variable with the correct value.
- Use brackets if necessary to clarify the order of operations.

2. Ignoring the Sign of Terms

- Keep track of positive and negative signs.
- Remember that subtraction signs affect the entire term following them.

3. Miscalculations in Multiplication

- Perform multiplications carefully, possibly using a calculator for complex numbers.
- Break down complex multiplications into smaller steps if needed.

4. Neglecting the Order of Operations

- Follow the standard rules to ensure accurate results.

Extending the Concept: Evaluating More Complex Expressions

Once comfortable with simple expressions, you can explore more complex ones involving:

- Multiple variables
- Exponents
- Fractions
- Parentheses

For example, if the expression was (0.9g - 2.1h) / (g + h), you would follow similar substitution steps, perform numerator and denominator calculations separately, then divide.

Summary

In summary, evaluating the expression 0.9g - 2.1h for G = 15 and H = 2 involves:

1. Substituting the given values into the expression.
2. Performing the multiplication operations.
3. Combining the results through subtraction.

The final result is 9.3, illustrating the importance of systematic calculation and understanding the underlying concepts of algebra.

Conclusion

Mastering the skill of evaluating algebraic expressions is crucial for students and professionals alike. It enhances problem-solving abilities and provides a foundation for advanced mathematical concepts. By carefully substituting values, following the order of operations, and performing calculations accurately, you can confidently evaluate complex expressions in various contexts. Remember, practice makes perfect—so keep working through different problems to strengthen your understanding and proficiency in algebra.

Keywords for SEO Optimization:

- Evaluate expression with variables
- Algebraic expression calculation
- Substituting values in algebra
- How to evaluate expressions
- Solving expressions with given variables
- Step-by-step algebra evaluation
- Mathematical expressions with G and H
- Basic algebra practice
- Algebra tips and tricks
- Variable substitution examples

Frequently Asked Questions

What is the value of the expression 0.9g - 2.1h when g = 15 and h = 2?

The value of the expression is 10.2.

How do you evaluate 0.9g - 2.1h given g = 15 and h = 2?

Substitute g = 15 and h = 2 into the expression: 0.9×15 - 2.1×2, which equals 13.5 - 4.2 = 10.2.

What is the step-by-step process to evaluate 0.9g - 2.1h for g=15 and h=2?

First, multiply 0.9 by 15 to get 13.5, then multiply 2.1 by 2 to get 4.2, and finally subtract 4.2 from 13.5 to get 10.2.

If g = 15 and h = 2, what is the simplified result of 0.9g - 2.1h?

The simplified result is 10.2.

Can you verify the calculation of 0.9g - 2.1h when g=15 and h=2?

Yes, substituting g=15 and h=2 gives 0.9×15 = 13.5 and 2.1×2=4.2, so the expression evaluates to 13.5 - 4.2 = 10.2.

What is the importance of substitution in evaluating algebraic

expressions like 0.9g - 2.1h?

Substitution allows us to replace variables with specific values, making it possible to compute the exact numerical value of the expression.

Is the expression 0.9g - 2.1h linear with respect to g and h?

Yes, the expression is linear because it involves variables raised to the first power and no products of variables.

How does changing the values of g and h affect the value of 0.9g - 2.1h?

Increasing g increases the expression's value, while increasing h decreases it, due to the coefficients 0.9 and -2.1 respectively.

Additional Resources

Evaluate The Expression For The Given Value Of The Variables 0.9g - 2.1h G = 15, H=2 is a common type of problem encountered in algebra, especially when dealing with expressions involving multiple variables. This type of question tests your understanding of substitution, algebraic manipulation, and basic arithmetic skills. Whether you're a student brushing up on your algebra or someone looking to refine your problem-solving techniques, understanding how to evaluate expressions with given variable values is a fundamental skill that underpins many areas of mathematics and science. In this article, we'll walk through a comprehensive, step-by-step guide on how to evaluate such an expression, illustrating the process with detailed explanations and helpful tips along the way.

Understanding the Problem

Before jumping into calculations, it's essential to understand what the problem is asking:

- You are given an algebraic expression: 0.9g - 2.1h
- You're also provided with the value of H = 2
- There's an additional piece of information: G = 15

Your goal is to evaluate the expression 0.9g - 2.1h by substituting the given variable values and then performing the necessary arithmetic operations.

Step 1: Clarify the Variables and Their Values

The first step in evaluating an algebraic expression with variables is to clearly identify the variables involved and their corresponding values.

Variables and Given Values:

Variable	Given Value
g	15
h	2

Note: Always double-check the problem statement to ensure you have the correct values for each variable.

Step 2: Substitute the Values into the Expression

Once the variables are identified, substitute the known values directly into the expression. This process is called substitution.

Substitution:

Original expression: 0.9g - 2.1h

Substitute g = 15 and h = 2:

0.9 × 15 - 2.1 × 2

Step 3: Simplify the Expression

Now, perform the multiplication operations:

Calculations:

- 0.9 × 15

- 0.9 × 15 = (0.9 × 10) + (0.9 × 5) = 9 + 4.5 = 13.5

- 2.1 × 2

- 2.1 × 2 = (2 × 2) + (0.1 × 2) = 4 + 0.2 = 4.2

Now, rewrite the expression with these simplified terms:

13.5 - 4.2

Step 4: Perform the Final Arithmetic

Finally, subtract the two numbers:

13.5 - 4.2 = 9.3

Result: The value of the expression 0.9g - 2.1h when g = 15 and h = 2 is 9.3.

Additional Tips for Evaluating Expressions

- Always confirm variable values: Make sure you have the correct values before substitution.
- Follow the order of operations: Remember PEMDAS (Parentheses, Exponents, Multiplication and Division, Addition and Subtraction).
- Be cautious with signs: Pay attention to negative signs and ensure proper placement during substitution.
- Use a calculator for complex operations: For more complicated expressions, a calculator helps prevent errors.

Common Mistakes to Avoid

1. Mixing up variable values: Double-check the values assigned to each variable.
2. Incorrect substitution: Ensure each variable is replaced properly without mixing terms.
3. Forgetting to perform all operations: Don't neglect multiplication or other operations after substitution.
4. Ignoring order of operations: Always perform multiplication before subtraction/addition unless parentheses indicate otherwise.

Practice Problems for Reinforcement

To solidify your understanding, try evaluating these expressions with different values:

1. Evaluate 2a + 3b where a = 4, b = 5.
2. Find the value of 5x - 7y where x = 10, y = 3.
3. Calculate 0.5m + 2n given m = 8, n = 6.

Conclusion

Evaluating an algebraic expression for given variable values is a straightforward process once you understand the steps:

1. Identify the variables and their values.
2. Substitute the values into the expression.
3. Simplify the resulting numerical expression.
4. Perform the final arithmetic operation to find the answer.

By practicing these steps regularly, you'll enhance your algebraic skills and become more confident in solving similar problems efficiently. Remember, attention to detail and systematic approach are key to mastering the art of evaluating expressions with variables.

Evaluate The Expression For The Given Value Of The Variables 0 9g 2 1h G 15 H 2

Evaluate The Expression For The Given Value Of The Variables 0 9g 2 1h G 15 H 2

Related Articles

- How Did Van Gogh Convay His Feelings In The Face Of Nature And His State Of Mind?
- From Which Location Could You Observe All Of The Stars During The Course Of A Year?
- What Is The Difference Between The Average Brain And The Procrastinator's Brain?

Back to Home