

1/3 X (15 + 6) = ????????????????

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Mathematics can sometimes seem complex, but many problems boil down to understanding basic operations like addition, multiplication, and fractions. One such problem that often confuses students and learners alike is: $1/3 \times (15 + 6) = ????????????????$. This question involves both parentheses and fractions, which are fundamental concepts in algebra and arithmetic. To tackle it effectively, we need to explore the order of operations, how to handle fractions, and step-by-step solutions to similar problems. In this article, we will delve into the process of solving this expression, making it easier for you to understand and apply these concepts in your math journey.

Understanding the Components of the Expression

Before jumping into the solution, it’s important to parse the components of the expression:

1/3 X (15 + 6) = ????????????????

- 1/3: A fraction representing one part of three equal parts.
- (15 + 6): An addition operation enclosed in parentheses.
- X: Multiplication symbol.
- = ????????????????: The unknown we need to find.

This expression combines fractions, parentheses, and multiplication. The key to solving it is understanding how to handle each part properly.

Order of Operations: PEMDAS/BODMAS

Mathematics follows specific rules for the order in which operations are performed, often summarized as PEMDAS or BODMAS:

- P/B: Parentheses/Brackets
- E/O: Exponents/Orders
- MD: Multiplication and Division (from left to right)
- AS: Addition and Subtraction (from left to right)

Applying these rules ensures consistent and correct results across all math problems.

Applying the Order to Our Expression

In the expression $1/3 \times (15 + 6)$:

1. Parentheses (15 + 6) should be evaluated first.
2. Then, multiply 1/3 by the result of the parentheses.

Step-by-Step Solution

Let's now go through the steps to solve the expression:

1. Calculate inside the parentheses:

$$15 + 6 = 21$$

2. Multiply 1/3 by the result:

$$1/3 \times 21$$

3. Simplify the multiplication:

To multiply a fraction by a whole number, multiply the numerator by the whole number, then divide by the denominator:

$$(1 \times 21) / 3 = 21 / 3$$

4. Simplify the fraction:

$$21 \div 3 = 7$$

Result:

$$1/3 \times (15 + 6) = 7$$

Understanding Fractions in Multiplication

Multiplying fractions by whole numbers is a common task in mathematics. Here's a quick guide:

How to Multiply a Fraction by a Whole Number

- Method 1: Convert the whole number to a fraction (e.g., 21 becomes 21/1), then multiply numerators and denominators:

$$(1/3) \times (21/1) = (1 \times 21) / (3 \times 1) = 21/3 = 7$$

- Method 2: Multiply the whole number by the numerator, then divide by the denominator:

Whole number $\times$ numerator / denominator

In our example, $21 \times 1 / 3 = 21/3 = 7$.

Why is this method effective?

Because it maintains the integrity of the fraction and ensures accurate results when dealing with mixed types of numbers.

Practical Applications of the Expression

Understanding how to evaluate expressions like $1/3 \times (15 + 6)$ is important in various real-world contexts, such as:

- **Budgeting and Finance:** Calculating fractions of amounts, like one-third of total expenses.
- **Cooking and Recipes:** Dividing ingredients into parts, e.g., one-third of a mixture.
- **Construction and Engineering:** Determining fractional measurements or proportions.
- **Education and Learning:** Building foundational skills in algebra and arithmetic.

Common Mistakes to Avoid

When solving expressions like this, learners often make some common errors:

1. Ignoring the Parentheses

Always evaluate parentheses first; skipping this step leads to incorrect answers.

2. Misapplying the Order of Operations

Remember that multiplication and division come before addition and subtraction unless parentheses dictate otherwise.

3. Forgetting to Simplify Fractions

Always reduce your fraction to its simplest form if possible, to make calculations easier and results clearer.

4. Confusing Multiplication with Addition

Ensure that multiplication is performed after parentheses are evaluated, not before.

Additional Practice Problems

To reinforce your understanding, try solving these similar problems:

1. Calculate: $\frac{2}{5} \times (20 - 4)$
2. Evaluate: $\frac{3}{4} \times (18 + 12)$
3. Solve: $\frac{5}{8} \times (16 + 8)$
4. Find the value of: $\frac{1}{2} \times (30 - 10)$
5. Determine: $\frac{4}{7} \times (14 + 7)$

By practicing these types of problems, you'll become more comfortable with fractions, parentheses, and the order of operations.

Summary

In conclusion, solving the expression $\frac{1}{3} \times (15 + 6) = \text{????????????}$ involves understanding the order of operations, dealing with fractions, and simplifying your calculations step-by-step. The key takeaways are:

- Always evaluate parentheses first.
- Convert and multiply fractions carefully.
- Simplify the result to its lowest terms.
- Practice regularly with similar problems to build confidence.

The final answer to the original problem is:

$$\frac{1}{3} \times (15 + 6) = 7$$

Mastering these concepts not only helps with this specific problem but also lays a strong foundation for more advanced mathematical topics. Keep practicing, and soon, solving such expressions will become second nature!

Frequently Asked Questions

What is the value of $\frac{1}{3} \times (15 + 6)$?

First, add 15 and 6 to get 21. Then, multiply $\frac{1}{3}$ by 21: $(\frac{1}{3}) \times 21 = 7$. So, the answer is 7.

How do you solve the expression $\frac{1}{3} \times (15 + 6)$?

First, evaluate the sum inside the parentheses: $15 + 6 = 21$. Then, multiply $\frac{1}{3}$ by 21: $(\frac{1}{3}) \times 21 = 7$. The answer is 7.

Why is the answer to $\frac{1}{3} \times (15 + 6)$ equal to 7?

Because when you add 15 and 6 to get 21, then multiply by $\frac{1}{3}$, which is the same as dividing by 3, you get 21 divided by 3, resulting in 7.

Can the expression $\frac{1}{3} \times (15 + 6)$ be simplified further?

No, after calculating, the expression simplifies to 7, which is the final answer.

What is the order of operations used to solve $\frac{1}{3} \times (15 + 6)$?

The order of operations is to evaluate parentheses first ($15 + 6 = 21$), then multiply by $\frac{1}{3}$, resulting in 7.

Additional Resources

Unveiling the Mystery: Understanding the Expression $\frac{1}{3} \times (15 + 6) = \text{????????????}$

Mathematics often presents us with expressions that seem straightforward at first glance but reveal deeper layers upon closer inspection. One such expression— $\frac{1}{3} \times (15 + 6) = \text{????????????}$ —serves as an excellent example of how simple arithmetic can lead to a variety of interpretations and insights. This detailed exploration aims to dissect this expression comprehensively, providing clarity, context, and understanding from multiple angles.

The Core Components of the Expression

Before diving into calculations, it's crucial to understand each element of the expression:

- Fractional coefficient: $\frac{1}{3}$
- Parentheses: $(15 + 6)$
- Equality sign: $=$
- Question marks: ?????????????

The Fraction $\frac{1}{3}$

This is a simple rational number, representing one divided by three. It plays a central role in many mathematical operations, especially in division, proportion, and fraction-related contexts.

The Parentheses $(15 + 6)$

Parentheses indicate that the operation within them should be performed first, following the order of operations (PEMDAS/BODMAS rules). The sum inside is straightforward: 15 plus 6.

The Question Marks

The sequence ????????????? appears as a placeholder for the result of the calculation or perhaps a code or pattern. Given the context, the most logical interpretation is that it is asking for the numerical result of the expression, i.e., "What is the value of $\frac{1}{3} \times (15 + 6)$?"

Step-by-Step Calculation

Step 1: Simplify Inside the Parentheses

Calculate $(15 + 6)$:

$$\begin{aligned} &\backslash \\ &15 + 6 = 21 \\ &\backslash \end{aligned}$$

Step 2: Multiply by $\frac{1}{3}$

Now, multiply $\frac{1}{3}$ by the result:

$$\begin{aligned} &\backslash \\ &\frac{1}{3} \times 21 \\ &\backslash \end{aligned}$$

Step 3: Perform the Multiplication

Multiplying a fraction by a whole number:

$$\begin{aligned} &\backslash \\ &\frac{1}{3} \times 21 = \frac{21}{3} = 7 \\ &\backslash \end{aligned}$$

Result: The value of the expression is 7.

Interpreting the Placeholder: ??????????????

Given the straightforward calculation, the sequence of question marks likely represents the answer 7 in a stylized or coded manner. Alternatively, it might be emphasizing the curiosity about what the expression evaluates to, prompting the reader to perform the calculation.

Deeper Insights and Broader Context

While the numerical answer is simple, this expression offers several avenues for deeper discussion:

1. The Significance of Order of Operations

The importance of parentheses in mathematical expressions cannot be overstated. They ensure that calculations are performed in the correct sequence, which is fundamental to obtaining accurate results. Here, the parentheses guarantee that addition occurs before multiplication, aligning with the standard order of operations.

2. Fractional Multiplication and Its Applications

Multiplying by fractions is common in various fields:

- Cooking: Adjusting recipes by fractions.
- Finance: Calculating interest rates.
- Science: Converting units or scaling quantities.

Understanding how to manipulate fractions is essential for practical problem-solving.

3. The Role of Placeholder Symbols

The sequence of question marks might be seen as a generic placeholder in mathematical problems or puzzles. It serves as a prompt for the solver to find the answer rather than an actual part of the calculation.

Extending the Concept: Variations and Related Problems

To deepen understanding, consider exploring related variations:

1. Changing the Numbers Inside the Parentheses

- $(20 + 10) \times \frac{1}{3} = 10$
- $(8 + 12) \times \frac{1}{3} = \frac{20}{3} \approx 6.666\dots$

2. Altering the Fraction

- $\frac{2}{5} \times (15 + 6) = \frac{42}{5} = 8.4$

- $\frac{3}{4} \times (12 + 8)$: $\frac{3}{4} \times 20 = 15$

3. Applying the Concept in Real-World Scenarios

- Scaling recipes: If a recipe calls for $\frac{1}{3}$ of an ingredient, and the total needed is based on a sum, understanding how to compute it is practical.
- Budget allocations: Distributing a total amount proportionally based on fractions.

Common Misconceptions and Pitfalls

While this problem appears simple, several common errors can occur:

- Ignoring parentheses: Performing addition after multiplication, leading to incorrect results.
- Misapplying fractions: Multiplying before simplifying can cause confusion.
- Misinterpretation of the placeholder: Assuming the question marks hold some secret code rather than recognizing them as a prompt for the answer.

Educational Significance

This expression is an excellent teaching tool for:

- Reinforcing the order of operations.
- Practicing fraction multiplication.
- Developing problem-solving skills.
- Recognizing the importance of parentheses in complex expressions.

It highlights how even basic arithmetic can serve as a foundation for more advanced mathematical reasoning.

Cultural and Contextual Considerations

The use of question marks as placeholders or symbols can also be seen in:

- Puzzles and riddles: Prompting the solver to find the missing value.
- Coding and encryption: Where symbols stand in for unknowns.
- Design and typography: As aesthetic elements or indicators of unknown quantities.

Understanding this context helps appreciate the broader utility of such symbols beyond pure mathematics.

Summarizing the Key Takeaways

- The expression $\frac{1}{3} \times (15 + 6)$ simplifies to 7.

- Parentheses are crucial for correct calculation order.
- Fractions are versatile and widely applicable.
- Placeholder symbols like question marks often represent unknowns or prompts.
- Mastery of basic operations paves the way for tackling more complex problems.

Final Reflection

Mathematics is not just about numbers; it is a language that communicates logic, structure, and relationships. The seemingly simple expression $\frac{1}{3} \times (15 + 6)$ serves as a microcosm of this language, illustrating foundational concepts in arithmetic and problem-solving. Recognizing the importance of each component, applying correct operational rules, and understanding context enrich our mathematical literacy. Whether you're a student, educator, or enthusiast, engaging deeply with such expressions enhances analytical skills and fosters a greater appreciation for the elegance of mathematics.

Additional Resources for Further Learning

- Khan Academy: Basic algebra and fractions courses.
- Mathematics textbooks: Chapters on order of operations and fractions.
- Online calculators: To verify manual calculations.
- Puzzle websites: For practice with placeholders and riddles.

In conclusion, the answer to $\frac{1}{3} \times (15 + 6) = \text{????????????}$ is 7, but the journey through this problem highlights essential mathematical principles, the importance of careful computation, and the role of symbols and placeholders in problem-solving. Embracing these lessons equips learners with the tools to approach a wide array of mathematical challenges confidently.

[1 3 X 15 6](#)

1 3 X 15 6

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