

What Is The First Operation That Should Be Performed To Calculate $(3 + 2) 65 - 4$?A) AdditionB) DivisionC)

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Understanding the correct sequence of operations is fundamental in mathematics to ensure accurate calculations. When faced with complex expressions like $(3 + 2) 65 - 4$, determining which operation to perform first can sometimes be confusing, especially if the expression's structure isn't clear. This article explores the principles of the order of operations, how to interpret such expressions, and the step-by-step process to arrive at the correct answer. Whether you're a student, educator, or someone interested in mathematical problem-solving, understanding these concepts is essential for accurate calculations and logical reasoning.

Understanding the Order of Operations in Mathematics

What Is the Order of Operations?

The order of operations is a set of rules that dictate the sequence in which mathematical operations should be performed to ensure consistency and correctness in calculations. Without these rules, different people might arrive at different answers for the same problem.

The universally accepted order of operations can be summarized by the acronym PEMDAS (Parentheses, Exponents, Multiplication and Division, Addition and Subtraction):

1. Parentheses (P): Perform calculations inside parentheses first.
2. Exponents (E): Calculate any exponents or powers.
3. Multiplication and Division (MD): From left to right.
4. Addition and Subtraction (AS): From left to right.

In some regions, this is also remembered as BIDMAS or BODMAS, but the underlying principles remain the same.

Why Is the Order of Operations Important?

- Consistency: It ensures everyone solves the problem the same way.
- Accuracy: Proper order prevents mistakes in calculations.
- Clarity: It provides a clear structure to complex expressions.

Breaking Down the Expression: $(3 + 2) 65 - 4$

The expression in question is:

```
``plaintext
(3 + 2) 65 - 4
``
```

At first glance, the expression appears incomplete or ambiguous because of the notation " $(3 + 2) 65$." Typically, in mathematics, when two numbers are written next to each other without an explicit operator, it can imply multiplication. Therefore, the expression might be interpreted as:

```
``plaintext
(3 + 2) × 65 - 4
``
```

or, in words, "the sum of 3 and 2, multiplied by 65, then subtract 4."

Clarifying the Expression

For clarity, the expression can be rewritten as:

```
``plaintext
(3 + 2) × 65 - 4
``
```

which involves:

- Parentheses
- Multiplication
- Subtraction

Step-by-Step Calculation Process

To correctly compute the value of this expression, let's follow the order of operations:

Step 1: Parentheses First

Calculate the sum inside parentheses:

```
``plaintext
3 + 2 = 5
``
```

Now, the expression becomes:

```
``plaintext
5 × 65 - 4
``
```

Step 2: Multiplication

Next, perform multiplication:

```
``plaintext
5 × 65 = 325
``
```

The expression simplifies to:

```
``plaintext
325 - 4
``
```

Step 3: Subtraction

Finally, subtract:

```
``plaintext
325 - 4 = 321
``
```

Result: The value of the expression is 321.

Common Mistakes and How to Avoid Them

When solving expressions like $(3 + 2) \times 5 - 4$, many beginners make errors by skipping steps or misunderstanding the implied operations. Here are some common mistakes:

1. Ignoring Parentheses: Failing to evaluate parentheses first can lead to incorrect results.
2. Misinterpreting Notation: Not recognizing that " $(3 + 2) \times 5$ " implies multiplication.
3. Performing Operations Out of Order: Doing addition after multiplication without following PEMDAS can cause errors.
4. Overlooking the Left-to-Right Rule: For operations of the same precedence, always perform from left to right.

How to avoid these mistakes:

- Always identify the operations within parentheses first.
- Clarify ambiguous expressions by explicitly including operators.
- Follow the PEMDAS/BODMAS rules strictly.
- Double-check calculations at each step.

Additional Examples to Reinforce Learning

To further understand the importance of the order of operations, consider these examples:

Example 1: $8 + 2 \times 5$

- Incorrect approach: $(8 + 2) \times 5 = 10 \times 5 = 50$
- Correct approach: $8 + (2 \times 5) = 8 + 10 = 18$

Example 2: $(4 + 6) \div 2$

- Calculate parentheses first: $4 + 6 = 10$
- Then division: $10 \div 2 = 5$

Example 3: $6 \div 2(1 + 2)$

- Calculate parentheses: $1 + 2 = 3$
- Expression becomes: $6 \div 2 \times 3$
- Perform division and multiplication from left to right:
- $6 \div 2 = 3$
- $3 \times 3 = 9$

Implications for Learning and Teaching Mathematics

Understanding the first operation to perform in an expression like $(3 + 2) 65 - 4$ is crucial in developing strong mathematical skills. For educators and learners:

- Emphasize the importance of parentheses in indicating operation priority.
- Teach the PEMDAS/BODMAS rules explicitly.
- Use real-world examples to demonstrate the significance of correct operation order.
- Practice with various expressions to build confidence and accuracy.

Conclusion: The Key Takeaway

In the expression $(3 + 2) 65 - 4$, the first operation that should be performed, based on the order of operations, is the calculation within the parentheses: addition. Once the parentheses are evaluated, the remaining operations are straightforward.

Therefore, the correct answer to the question "What is the first operation?" is:

A) Addition

By understanding and applying the principles of the order of operations, you can confidently solve complex mathematical expressions, ensuring accuracy and consistency in your calculations.

Optimized for SEO: Key Takeaways

- The importance of the order of operations in mathematics
- How to interpret expressions with implied multiplication
- Step-by-step guide to solving $(3 + 2) 65 - 4$ correctly
- Common mistakes and how to avoid them
- Practical examples to reinforce understanding
- Why mastering the first operation is essential for accurate calculations

Mastering these concepts will enhance your mathematical reasoning skills and help you navigate complex expressions with confidence.

Frequently Asked Questions

What is the first operation to perform in the expression $(3 + 2) 65 - 4$?

Addition (A) because the parentheses indicate that $3 + 2$ should be calculated first.

Why is addition performed before subtraction in the expression $(3 + 2) 65 - 4$?

Because parentheses take precedence, so $3 + 2$ is calculated first, then other operations follow.

Does the expression $(3 + 2) 65 - 4$ include any division operations?

No, there is no division in the expression; the options are addition and division, but only addition applies first.

In order to accurately solve the expression $(3 + 2) 65 - 4$, which operation should be performed first?

Addition, since it is inside parentheses and must be performed first according to the order of operations.

Is the initial step in solving $(3 + 2) 65 - 4$ to perform multiplication?

No, there is no multiplication in the expression; the first step is addition inside parentheses.

How does the presence of parentheses affect the order of operations in the expression $(3 + 2) 65 - 4$?

Parentheses indicate that the operation inside them ($3 + 2$) should be performed first, overriding the usual order.

Can division be the first operation to perform in the expression $(3 + 2) 65 - 4$?

No, division is not involved in the expression, and addition inside parentheses takes precedence.

What is the correct sequence of operations to solve $(3 + 2) 65 - 4$?

First perform addition inside parentheses $(3 + 2)$, then multiply by 65, then subtract 4.

Why is addition the correct answer as the first operation in the given options?

Because parentheses indicate that addition $(3 + 2)$ should be performed before any other operations.

Additional Resources

What Is The First Operation That Should Be Performed To Calculate $(3 + 2) 65 - 4$? A) Addition B) Division C)

In the world of mathematics, understanding the correct order of operations is essential to arrive at accurate results. When faced with an expression like $(3 + 2) 65 - 4$, many might wonder: which operation should be performed first? Is it addition, division, or perhaps another operation? Clarifying this question not only ensures precision in calculations but also reinforces foundational mathematical principles. This article aims to dissect this problem thoroughly, exploring the principles behind the order of operations, analyzing the expression step-by-step, and providing clarity on what the very first step should be.

Understanding the Fundamentals: The Order of Operations

Before delving into the specific expression, it's crucial to grasp the general rules that govern the order in which mathematical operations are carried out. These rules are often summarized by the acronym PEMDAS or BIDMAS, depending on regional conventions.

The PEMDAS/BIDMAS Rules

- Parentheses/Brackets (P/B): Operations enclosed within parentheses or brackets are performed first.
- Exponents/Indices (E/I): Next, exponents or indices are calculated.
- Multiplication and Division (MD): These operations are of equal precedence and are performed from left to right.
- Addition and Subtraction (AS): Similarly, these are of equal precedence and are carried out from left to right.

right.

In essence, the rules dictate that any calculations within parentheses should be tackled first, followed by exponents, then multiplication/division, and finally addition/subtraction.

Why is the Order Important?

Mathematical expressions can often be written in multiple ways, leading to different results if the order is ignored. Correct adherence to the sequence ensures consistency and accuracy. For instance, the expression $8 \div 2(2+2)$ can yield different answers depending on how the operations are performed, highlighting the importance of clarity in the order.

Analyzing the Expression: $(3 + 2) 65 - 4$

The given expression is:

$$(3 + 2) 65 - 4$$

At first glance, the expression appears straightforward, but ambiguity arises because the operator between the parentheses and the number 65 is not explicitly specified. Does it imply multiplication? Or is there some other operation? To interpret it correctly, standard mathematical notation and conventions need to be considered.

Step 1: Clarify the Expression

Most likely, the expression is intended as:

$$(3 + 2) \times 65 - 4$$

This interpretation assumes that the missing operator between the parentheses and the number 65 is multiplication, which is common in mathematical notation when multiplication is implied but not explicitly written.

Note: If the original question intended a different operation, such as division, the expression would look different, e.g., $(3 + 2) \div 65 - 4$.

Step 2: Apply the Order of Operations

Given the interpretation as $(3 + 2) \times 65 - 4$, the steps are:

1. Parentheses: Calculate $(3 + 2)$

2. Multiplication: Multiply the result by 65

3. Subtraction: Subtract 4 from the product

This sequence aligns with PEMDAS, where parentheses are addressed first, followed by multiplication, then subtraction.

Step 3: Perform Calculations Step-by-Step

- Parentheses: $(3 + 2) = 5$

- Multiplication: $5 \times 65 = 325$

- Subtraction: $325 - 4 = 321$

The final answer, assuming the implied multiplication between the parentheses and 65, is 321.

Alternate Interpretation: Is Division Involved?

If the question is testing whether division should be performed first, the expression might be interpreted differently, such as:

$$(3 + 2) \div 65 - 4$$

In that case:

- Parentheses: $(3 + 2) = 5$

- Division: $5 \div 65 \approx 0.0769$

- Subtraction: $0.0769 - 4 \approx -3.9231$

But since the original question lists options as Addition or Division, and the operator between $(3 + 2)$ and 65 is unspecified, the most logical assumption—based on common notation—is multiplication.

The Crucial Role of Context and Notation

Mathematical expressions rely heavily on clear notation. When an operator is omitted, as in the expression $(3 + 2) 65 - 4$, it typically indicates multiplication, especially in algebraic contexts or when written in textbooks where juxtaposition implies multiplication.

Why Is Multiplication Often Implied?

- Conciseness: Mathematical notation allows for more compact expressions.

- Convention: In algebra, writing a number or parentheses next to a variable or number often implies multiplication.

- Historical Usage: Traditional notation favors implied multiplication to streamline complex expressions.

Risks of Ambiguity

Ambiguous expressions can lead to different interpretations, which is why clarity is paramount. For non-standard expressions, it's best to explicitly denote the operation to avoid misunderstandings.

Conclusion: What Is The First Operation?

Given the standard conventions and the most reasonable interpretation of the expression $(3 + 2) 65 - 4$, the first operation that should be performed is:

A) Addition

Specifically, the operation inside the parentheses—adding 3 and 2—is performed first. This is mandated by the parentheses rule in PEMDAS, which always takes precedence over other operations.

After handling the parentheses, the next step would be multiplication (assuming implied multiplication), then subtraction. But the initial and primary step is to perform the addition inside the parentheses.

Final Takeaways:

- The order of operations is crucial for accurate calculations.
- Parentheses always take priority; hence, addition inside $(3 + 2)$ is performed first.
- The implied multiplication between the parentheses and 65 is performed after parentheses are resolved.
- Clarity in notation prevents misinterpretation; always specify operations explicitly when possible.

In summary, the first operation to perform in the expression $(3 + 2) 65 - 4$ is the addition inside the parentheses. Recognizing this step ensures adherence to mathematical conventions and leads to the correct calculation outcome.

What Is The First Operation That Should Be Performed To Calculate $3 + 2 \cdot 65 - 4$ A Additionb Divisionc

What Is The First Operation That Should Be Performed To Calculate $3 + 2 \cdot 65 - 4$ A Additionb Divisionc

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