

**Perform The Indicated Operation.1)
(320x + 18x) 6x2) 53 - 105 / 55 +
6Please Include Explanation/steps,**

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6x2) 53 - 105 / 55 + 6Please Include
Explanation/steps,**

When tackling mathematical expressions, especially those involving variables and multiple operations, it's essential to follow a systematic approach. This ensures accuracy and clarity in solving complex expressions. In this article, we will explore how to perform the indicated operations step-by-step, focusing on the expression:

$$(320x + 18x) 6x2) 53 - 105 / 55 + 6$$

While the expression appears somewhat complex and perhaps contains typographical ambiguities, our goal is to interpret and simplify it logically. We will break down each part, clarify assumptions, and perform calculations systematically.

Understanding the Expression

Initial Analysis

The given expression is:

$$(320x + 18x) 6x2) 53 - 105 / 55 + 6$$

At first glance, there are some ambiguities:

- The segment "6x2)" may imply multiplication or a typo.
- The placement of parentheses is unclear.
- The sequence "6x2) 53 - 105 / 55 + 6" seems to be a continuation or separate parts.

To proceed, we will interpret the expression as a combination of parts, possibly intended as:

1. The sum of like terms: $(320x + 18x)$
2. Then multiplied by $6x^2$
3. Followed by the sequence: $53 - 105 / 55 + 6$

We will analyze and solve each step accordingly.

Step-by-Step Solution Guide

Step 1: Simplify the Like Terms $(320x + 18x)$

Since both terms are in x , combine them:

$$- 320x + 18x = (320 + 18) x = 338x$$

Step 2: Interpret and Simplify the Multiplication by $6x^2$

Assuming the expression is:

$$338x \times 6x^2$$

We can compute this as:

$$- 338x \times 6x^2 = 338 \times 6 \times x \times x^2$$

Multiplying constants:

$$- 338 \times 6 = 2028$$

Multiplying variables:

$$- x \times x^2 = x^{\{1 + 2\}} = x^{\{3\}}$$

Therefore:

$$- 338x \times 6x^2 = 2028 x^3$$

Step 3: Address the Remaining Expression: $53 - 105 / 55 + 6$

This part involves division and addition/subtraction. To clarify, apply the

order of operations (PEMDAS/BODMAS):

- First, division
- Then addition and subtraction

The expression:

$$53 - 105 / 55 + 6$$

is interpreted as:

1. Compute $105 / 55$
2. Subtract that result from 53
3. Add 6 to the result

Calculations:

$$- 105 / 55$$

Simplify the fraction:

$$- 105 / 55 = (105 \div 5) / (55 \div 5) = 21 / 11 \approx 1.9091$$

Now:

$$- 53 - 1.9091 \approx 51.0909$$

Finally, add 6:

$$- 51.0909 + 6 \approx 57.0909$$

For exact fractional form:

$$- 53 - (21/11) + 6$$

Express 53 and 6 as fractions with denominator 11:

$$- 53 = (53 \times 11)/11 = 583/11$$

$$- 6 = (6 \times 11)/11 = 66/11$$

Now:

$$(583/11) - (21/11) + (66/11) = (583 - 21 + 66)/11 = (628)/11 \approx 57.0909$$

Thus, the exact value is $628/11$.

Final Expression and Result

Combining the parts:

- From Step 2: $2028 x^3$
- From Step 3: $628/11$

The total expression appears to be:

$$2028 x^3 + 628/11$$

This is the simplified form based on the interpretation.

Summary of the Steps

- **Combine like terms:** $320x + 18x = 338x$
- **Multiply:** $338x \times 6x^2 = 2028 x^3$
- **Handle division and addition:** $53 - 105/55 + 6 \approx 628/11$
- **Final expression:** $2028 x^3 + 628/11$

Additional Tips for Performing Similar Operations

1. Always Clarify the Expression

- Ensure you understand the order and grouping.
- Clarify ambiguous segments before calculation.

2. Follow the Order of Operations

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

3. Simplify Step-by-Step

- Combine like terms early.
- Simplify fractions where possible.
- Keep track of variables separately from constants.

4. Use Proper Notation

- Write out calculations clearly.
- Use parentheses to denote order clearly.

Conclusion

Performing the indicated operations involves systematic steps—simplifying like terms, applying multiplication, handling division carefully, and combining results precisely. By following the outlined approach, you can confidently evaluate complex algebraic expressions. Remember, clarity and methodical calculations are key to avoiding errors and achieving correct results.

If you encounter similar problems in the future, break down each segment, follow the order of operations, and double-check your work to ensure accuracy. With practice, performing such operations becomes intuitive and efficient.

Frequently Asked Questions

How do I simplify the expression $320x + 18x$ before performing the indicated operations?

Combine like terms by adding the coefficients of x : $320x + 18x = (320 + 18)x = 338x$. This simplifies the expression to $338x$, making further calculations easier.

What is the result of multiplying $338x$ by 6 in the expression $338x \cdot 6$?

Multiply the coefficient 338 by 6: $338 \cdot 6 = 2028$. Therefore, $338x \cdot 6 = 2028x$.

How do I evaluate $53 - 105 / 55 + 6$ step-by-step?

Follow the order of operations (PEMDAS/BODMAS):

1. Division first: $105 / 55 \approx 1.9091$.
2. Substitute back: $53 - 1.9091 + 6$.

3. Perform subtraction and addition from left to right:

$$53 - 1.9091 \approx 51.0909;$$

$$51.0909 + 6 \approx 57.0909.$$

So, the result is approximately 57.09.

What is the importance of following the order of operations in these calculations?

The order of operations ensures that mathematical expressions are evaluated consistently and correctly. It prevents ambiguity, especially when multiple operations are involved, leading to the correct final answer.

Why should I combine like terms before performing multiplication in algebraic expressions?

Combining like terms simplifies the expression, reducing complexity and making subsequent calculations more straightforward. It ensures accuracy and saves time during problem-solving.

Can you summarize the steps to perform the indicated operations on $320x + 18x$ and the numerical expression $53 - 105 / 55 + 6$?

Certainly:

1. Combine like terms in $320x + 18x$: $338x$.

2. Multiply $338x$ by 6: $2028x$.

3. Simplify $53 - 105 / 55 + 6$ by following order of operations:

- Divide 105 by 55 ≈ 1.9091 .

- Subtract from 53: $53 - 1.9091 \approx 51.0909$.

- Add 6: $51.0909 + 6 \approx 57.0909$.

This summarizes the steps involved.

Additional Resources

Perform The Indicated Operation: A Step-by-Step Mathematical Breakdown and Explanation

When approaching algebraic expressions and operations, understanding the fundamental principles and systematic procedures is crucial. This detailed review aims to guide you through the process of simplifying and evaluating the given expressions:

1) $(320x + 18x)$

2) $6x^2$

3) $53 - 105 / 55 + 6$

We will dissect each expression, outline the steps involved, explain the

reasoning behind each step, and reinforce the concepts with detailed insights.

Understanding the Expressions and Their Structure

Before diving into calculations, it is essential to analyze the structure of each expression, identify the operations involved, and recognize the order of operations (PEMDAS/BODMAS rules).

Expression 1: $\backslash (320x + 18x) \backslash$

This expression involves a sum of two algebraic terms that share the variable $\backslash (x)$. The parentheses indicate that addition is to be performed within the brackets first, although in this case, the parentheses serve more as grouping rather than affecting the order, since addition is commutative.

Expression 2: $\backslash (6x^2)$

This is a simple algebraic term involving a coefficient and a squared variable. No operations need to be performed here unless specific substitution or evaluation is required.

Expression 3: $\backslash (53 - 105 / 55 + 6) \backslash$

This combines subtraction, division, and addition. The order in which these are performed is critical, following the standard precedence rules.

Step-by-Step Operations and Explanations

Let's analyze each expression in detail.

1. Simplifying $(320x + 18x)$

Step 1: Recognize like terms

- Both terms contain the variable x .
- Addition of like terms involves combining their coefficients.

Step 2: Combine the coefficients

- $320x + 18x = (320 + 18)x$

Step 3: Perform the addition

- $320 + 18 = 338$

Result:

$$(320x + 18x) = 338x$$

Key Point: The expression simplifies to a single term with a combined coefficient, streamlining further calculations or substitutions.

2. Understanding $6x^2$

This term is straightforward:

- The coefficient is 6.
- The variable x is squared, indicating x multiplied by itself.

Note: Without a specific value for x , this expression remains in algebraic form. If needed, substitution can be performed later when x is known.

3. Evaluating $53 - 105 / 55 + 6$

This expression contains multiple operations. To evaluate correctly, follow the order of operations:

Step 1: Identify the operations

- Division: $(105 / 55)$
- Subtraction: $(53 - (\text{result of division}))$
- Addition: Result of subtraction + 6

Step 2: Perform division first

- $(105 / 55)$

Step 3: Calculate $(105 / 55)$

- Simplify the fraction:

$$\left[\frac{105}{55} = \frac{21 \times 5}{11 \times 5} = \frac{21}{11} \right]$$

or approximately:

$$\left[\frac{21}{11} \approx 1.9091 \right]$$

Step 4: Rewrite the expression with decimal approximation

$$\left[53 - 1.9091 + 6 \right]$$

Step 5: Perform subtraction

$$\left[53 - 1.9091 = 51.0909 \right]$$

Step 6: Perform addition

$$\left[51.0909 + 6 = 57.0909 \right]$$

Final result:

$$\left[\boxed{\approx 57.09} \right]$$

Note: If exact value is preferred, leave the answer as $\left(53 - \frac{21}{11} + 6 \right)$.

Additional Insights and Considerations

To deepen your understanding, let's explore some related concepts, common pitfalls, and best practices when performing such operations.

Order of Operations (PEMDAS/BODMAS)

Understanding the hierarchy of operations is essential:

- Parentheses / Brackets: Simplify expressions inside first.
- Exponents / Orders: Calculate powers or roots next.
- Multiplication and Division: From left to right.
- Addition and Subtraction: From left to right.

Applying this systematically prevents mistakes, especially in complex expressions.

Handling Algebraic Terms

When combining like terms:

- Ensure variables are identical (including the same powers).
- Combine coefficients directly.
- Keep track of signs (positive/negative).

In the first expression, combining $(320x)$ and $(18x)$ demonstrates this principle clearly.

Fraction Operations

When dividing fractions or simplifying ratios:

- Look for common factors to simplify.
- When dividing one fraction by another, multiply by the reciprocal.
- For decimal approximations, consider the precision needed.

In the division $(105/55)$, simplification to $(21/11)$ helps preserve exactness.

Dealing with Multiple Operations

In expressions like the third one, always:

- Perform division before addition/subtraction.
- Use parentheses to clarify order if necessary.
- Be cautious with the sequence, especially when mixed operations are involved.

Extension: Substituting Values for (x)

Suppose you need to evaluate the entire expression for a specific value of (x) . Here's how to proceed:

- Substitute the value into the simplified expressions.
- Calculate step-by-step, following the order of operations.

Example:

Let $(x = 2)$.

- Simplified $(320x + 18x) = 338x$

$$\begin{aligned} &[\\ 338 \times 2 &= 676 \\ &] \end{aligned}$$

- $(6x^2 = 6 \times (2)^2 = 6 \times 4 = 24)$
- $(53 - 105/55 + 6)$

Using previous calculations:

$$\begin{aligned} &[\\ \approx &57.09 \\ &] \end{aligned}$$

Practical Applications and Relevance

Mastering the operations involved in these expressions is foundational for various fields:

- Algebra and Pre-Calculus: Simplifying expressions and solving equations.
- Physics: Calculating quantities involving variables and constants.
- Engineering: Analyzing formulas with multiple terms.
- Economics and Finance: Combining terms and evaluating complex expressions.

Understanding these operations enhances problem-solving skills and prepares you for more advanced topics.

Summary and Key Takeaways

- Combine like terms carefully: Recognize and sum coefficients of the same variable.
- Follow the order of operations strictly: Parentheses, exponents, multiplication/division, addition/subtraction.
- Simplify fractions early: Factorize and reduce to lowest terms when possible.
- Use approximate decimals when needed: For quick evaluations, but verify with exact fractions for precision.
- Practice substitution: Plug in specific values to evaluate expressions numerically.

Final Remarks

This comprehensive review underscores the importance of systematic approaches to algebraic operations. Whether simplifying expressions or evaluating them at particular values, adherence to the fundamental principles ensures accuracy and clarity. Developing proficiency in these steps builds a strong foundation for tackling more complex mathematical problems efficiently.

Remember, the key to mastering algebraic operations lies in understanding the structure, applying rules consistently, and practicing regularly. With these insights, you're well-equipped to perform the indicated operations confidently and correctly.

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