

) Which Of These Are Equivalent To-5 (-17)-5175? Choose ALL That Apply.175 (-17)-515-17-5175-17

Which Of These Are Equivalent To -5 (-17) - 5175? Choose ALL That Apply. 175 (-17) - 515 - 17 - 5175 - 17

Understanding mathematical expressions and their equivalences is fundamental in algebra and arithmetic. When dealing with complex expressions, especially those involving negative numbers, parentheses, and multiple operations, it can sometimes be challenging to determine whether two expressions are equivalent. This article aims to clarify how to analyze such expressions, exemplified by the problem: Which of these are equivalent to $-5 (-17) - 5175$? Choose all that apply: $175 (-17) - 515 - 17 - 5175 - 17$. We will explore the step-by-step process to evaluate and compare these expressions, ensuring you understand how to identify equivalences in similar problems.

Understanding the Core Expression: -5 (-17) - 5175

Before comparing the options, it's essential to evaluate the core expression:

Step 1: Simplify -5 (-17)

- Multiplying a negative number by another negative number results in a positive number:
- $-5 \times -17 = 85$

Step 2: Subtract 5175 from the result

- Now, subtract 5175:
- $85 - 5175 = -5090$

Result: The expression $-5 (-17) - 5175$ simplifies to -5090 .

This is our benchmark value; any expression equivalent to this should also evaluate to -5090 .

Evaluating the Options

Given the options:

- $175 (-17) - 515 - 17 - 5175 - 17$

We need to evaluate each to see if they match -5090 .

Option 1: $175(-17) - 515 - 17 - 5175 - 17$

Let's break it down step-by-step.

Step 1: Multiply 175 by -17

$$- 175 \times -17 = -2975$$

Step 2: Write the expression with this result

$$- -2975 - 515 - 17 - 5175 - 17$$

Step 3: Combine terms sequentially

$$- -2975 - 515 = -3490$$

$$- -3490 - 17 = -3507$$

$$- -3507 - 5175 = -8682$$

$$- -8682 - 17 = -8699$$

Final Result: -8699

Compare to -5090. Since $-8699 \neq -5090$, this expression is not equivalent.

Option 2: $175(-17) - 515 - 17 - 5175 - 17$

Wait, this appears to be the same as Option 1. If so, then it's also not equivalent.

Additional options (if any):

Suppose there are other options, such as:

- Option A: $-5(-17) - 5175$ (original expression)

- Option B: $85 - 5175$

- Option C: -5090

- Option D: $85 - 515 - 17 - 5175 - 17$

Let's evaluate Option D, which has similar components.

Step 1: Sum the constants

$$- 85 - 515 - 17 - 5175 - 17$$

Calculations:

$$- 85 - 515 = -430$$

$$- -430 - 17 = -447$$

$$- -447 - 5175 = -5622$$

$$- -5622 - 17 = -5639$$

Result: -5639

Compare to -5090; since $-5639 \neq -5090$, not equivalent.

Summary of Evaluation Process

- To determine if two expressions are equivalent:

1. Simplify each expression as much as possible.
2. Perform the calculations step-by-step.
3. Compare the simplified results.

- In this specific case:

- The original expression, $-5(-17) - 5175$, simplifies to -5090.
- The options provided, such as $175(-17) - 515 - 17 - 5175 - 17$, evaluate to values like -8699 or -5639, which are not equal to -5090.

Additional Tips for Evaluating and Comparing Expressions

1. Pay Attention to Parentheses and Operations

Parentheses dictate the order of operations. Always evaluate expressions inside parentheses first.

2. Simplify Step-by-Step

Breaking down complex expressions into smaller parts helps prevent mistakes.

3. Convert All Expressions to Standard Form

Express all options as a single number or simplified expression for easy comparison.

4. Use Algebraic Properties

- Distributive Property: $a(b + c) = ab + ac$
- Negative Sign Rules: $-(-a) = a$

Common Mistakes to Avoid

- Forgetting to multiply negative numbers correctly.
- Overlooking the order of operations.
- Misreading the expressions and assuming they are the same when they are not.

Conclusion: Which Expressions Are Equivalent?

Based on the evaluation:

- The original expression $-5(-17) - 5175$ simplifies to -5090 .
- The provided options such as $175(-17) - 515 - 17 - 5175 - 17$ evaluate to different values (e.g., -8699), so they are not equivalent.
- To determine equivalence, always perform precise calculations and compare the simplified results.

Final note: When tackling similar problems, always start by simplifying the core expression, carefully evaluate all options, and use logical reasoning to determine equivalence. This approach ensures accurate identification of equivalent expressions and strengthens your algebraic problem-solving skills.

Keywords: mathematical expressions, algebra, negative numbers, expression equivalence, simplifying expressions, negative multiplication, algebra tips

Frequently Asked Questions

Which of the following expressions are equivalent to $-5(-17) - 5175$?

175 and $-17 - 515$ are equivalent to $-5(-17) - 5175$.

Is the expression 175 equal to $-5(-17) - 5175$?

Yes, 175 is equivalent to $-5(-17) - 5175$.

Does the expression $-17 - 515$ match the value of $-5(-17) - 5175$?

Yes, $-17 - 515$ is equivalent to $-5(-17) - 5175$.

Are the expressions 175 and $-17 - 515$ both equivalent to $-5(-17) - 5175$?

Yes, both 175 and $-17 - 515$ are equivalent to $-5(-17) - 5175$.

Is the expression $-17 - 5175$ equivalent to $-5 (-17) - 5175$?

No, $-17 - 5175$ is not equivalent to $-5 (-17) - 5175$.

Which expressions from the list are NOT equivalent to $-5 (-17) - 5175$?

The expression $-17 - 5175$ is not equivalent to $-5 (-17) - 5175$.

Can $-5 (-17) - 5175$ be simplified to 175?

Yes, $-5 (-17) - 5175$ simplifies to 175.

Additional Resources

Understanding Mathematical Equivalence: A Deep Dive into the Expression $-5 (-17) - 5175$ and Related Forms

Mathematics often presents us with complex expressions that can seem daunting at first glance. One such expression is $-5 (-17) - 5175$, which might appear straightforward but opens the door to numerous equivalent forms once we analyze its components. If you've encountered similar expressions like $175 (-17) - 515 - 17 - 5175 - 17$ and wondered whether they are equivalent, you're not alone. This article aims to thoroughly explore this question, breaking down each expression, calculating their values, and examining which forms are truly equivalent to $-5 (-17) - 5175$. Whether you're a student, educator, or enthusiast, understanding these equivalences enhances your grasp of algebraic manipulation and number properties.

Deciphering the Core Expression: $-5 (-17) - 5175$

Before comparing with other expressions, we need to understand the original expression's structure and value.

What Does $-5 (-17) - 5175$ Mean?

This expression combines two operations: multiplication and subtraction.

- Multiplication: -5 multiplied by -17
- Subtraction: the result of the multiplication minus 5175

Let's evaluate each part meticulously.

Step-by-Step Calculation

1. Calculate $-5 (-17)$:

Multiplying two negative numbers:

$$\begin{aligned} & \backslash \\ & -5 \times -17 = 85 \\ & \backslash \end{aligned}$$

Since the product of two negatives is positive, this simplifies to 85.

2. Subtract 5175:

Now, subtract 5175 from 85:

$$\begin{aligned} & \backslash \\ & 85 - 5175 = -5090 \\ & \backslash \end{aligned}$$

Final Value:

$$\begin{aligned} & \backslash \\ & -5(-17) - 5175 = \boxed{-5090} \\ & \backslash \end{aligned}$$

Analyzing the Candidate Expressions for Equivalence

The question asks: Which of these are equivalent to $-5(-17) - 5175$? The options provided are:

- 175
- (-17)
- -515
- -17
- -5175
- -17

(Note: There seems to be a repetition of "-17" in the list; assuming it's a typo or intentional emphasis, but it doesn't affect the analysis.)

Our goal is to determine which of these expressions or numbers are equal to -5090. Let's examine each candidate.

Evaluating Each Candidate Expression

1. 175

- Is 175 equal to -5090?

Since 175 is positive and much smaller than -5090, no.

Conclusion: Not equivalent.

2. (-17)

- Value: -17

- Compare to -5090

- $-17 \neq -5090$

Conclusion: Not equivalent.

3. -515

- Value: -515

- Compare to -5090

- $-515 \neq -5090$

Conclusion: Not equivalent.

4. -17 (repeated)

- Same as earlier, -17, so not equivalent.

5. -5175

- Value: -5175

- Compare to -5090

- $-5175 \neq -5090$

Conclusion: Not equivalent.

Summary of Calculations and Results

Expression	Calculated Value	Is it equal to -5090?	Conclusion
-5 (-17) - 5175	-5090	Yes	Yes
175	175	No	No
(-17)	-17	No	No

-515	-515	No	No
-17	-17	No	No
-5175	-5175	No	No

Result: Only $-5(-17) - 5175$ is equivalent to -5090 , the value we computed.

Interpreting the Expression Variants: Why Some Are Not Equivalent

Understanding why certain expressions are not equivalent involves reviewing the operations and their values.

Why is $-5(-17) - 5175$ equal to -5090 ?

- The multiplication yields 85 (since two negatives multiply to positive).
- Subtracting 5175 from 85 results in a negative number: -5090 .

Why are the other expressions not equivalent?

- 175 is a positive number vastly different from -5090 .
- -17 and -515 are much closer in magnitude but still do not match -5090 .
- -5175 is close in magnitude but still off by 85 (since -5175 vs. -5090).

Additional Insights: Variations of the Original Expression

Suppose someone tries to create expressions similar to the original but with different numbers or operations. Let's examine some potential variants:

- $-5(-17) - 5175$: equals -5090 (as demonstrated)
- $-5(17) - 5175$: equals $-85 - 5175 = -5260$, which is different.
- $-(-5)(-17 - 5175)$: equals $-5(-17 - 5175)$

Calculating:

```
\[
-17 - 5175 = -5192
\]
\[
-5 -5192 = 25960
\]
```

which is not equivalent to -5090.

This highlights how small changes in the expression dramatically alter the outcome, emphasizing the importance of precise operations.

Key Takeaways for Mathematical Equivalence

- Always evaluate expressions step-by-step. Use order of operations: parentheses first, then multiplication/division, then addition/subtraction.
- Compare the final numeric values. Equivalence requires identical values.
- Beware of similar-looking expressions. Slight differences in operations or numbers can produce vastly different results.
- Context matters: When comparing expressions, ensure they are simplified to their numeric form to establish equivalence confidently.

Final Verdict: Which Are Equivalent?

Based on our detailed calculations:

- Only the original expression $-5 (-17) - 5175$ evaluates to -5090.
- None of the listed options (175, -17, -515, -5175) are equal to -5090.

Therefore, the only expression equivalent to $-5 (-17) - 5175$ is itself.

Conclusion

Mathematical expressions may seem complex initially, but breaking them down into their fundamental operations reveals their true values. In this case, the expression $-5 (-17) - 5175$ simplifies neatly to -5090, and none of the other provided options match this value. Recognizing these differences is crucial for problem-solving accuracy, especially when working with algebraic manipulations or verifying equivalences.

Always remember: meticulous calculation and comparison are key to understanding mathematical equivalence. Whether you're tackling homework or designing complex equations, this approach helps ensure clarity and correctness.

End of Article

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