Evaluating Expressions with Grouping Symbols

Evaluating Expressions with Grouping Symbols: Find, Fix, and Work Backward

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Evaluate innermost grouping symbols first, then multiplication/division, then addition/subtraction. Brackets and braces work like parentheses. For $3 \times [8 - (2 + 1)]$, compute $2 + 1 = 3$, then $8 - 3 = 5$, then $3 \times 5 = 15$.

Worked example

Evaluate $5 \times [12 - (4 + 2)]$.

1. $4 + 2 = 6$.
2. $12 - 6 = 6$.
3. $5 \times 6 = 30$.
Answer: 30.

Practice Problems

Show your thinking.

1. Correct: $50 - [6 \times (2 + 3)] = 44 \times 5 = 220$.

2. Find the missing number in $4 \times (\square + 2) = 36$.

3. Insert parentheses in $18 - 6 \div 3$ to make the value 4.

4. A student says $3 \times [4 + (8 - 2)]$ and $3 \times 4 + (8 - 2)$ are equal. Find both values.

5. Find a in $72 \div [3 \times a] = 8$.

6. Correct the final line:
$2 \times \{20 - [4 + (3 \times 2)]\} = 2 \times 10 = 12$.

7. Use one pair of parentheses to make $5 + 3 \times 4$ equal 32.

8. An expression is $60 \div (10 - 4) + 2$. A result of 12 is proposed. Verify it with actual steps.

Answer Key

1. 20.
2. 7.
3. $(18 - 6) \div 3 = 4$.
4. 30 and 18; not equal.
5. 3.
6. 20.
7. $(5 + 3) \times 4 = 32$.
8. 12 is correct.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Inner parentheses: $2 + 3 = 5$.
2. Bracket product: $6 \times 5 = 30$.
3. $50 - 30 = 20$; subtraction cannot be done before the bracket.

Problem 2

1. $36 \div 4 = 9$ is the grouped sum.
2. $9 - 2 = 7$ is missing.
3. $4 \times (7 + 2) = 36$ checks it.

Problem 3

1. The desired quotient 4 with divisor 3 needs dividend $4 \times 3 = 12$.
2. $18 - 6 = 12$, so group that subtraction.
3. $(18 - 6) \div 3 = 12 \div 3 = 4$.

Problem 4

1. $8 - 2 = 6$ in both expressions.
2. First: $3 \times (4 + 6) = 30$.
3. Second: $12 + 6 = 18$.

Problem 5

1. The bracket must equal $72 \div 8 = 9$.
2. $3a = 9$ gives $a = 9 \div 3 = 3$.
3. $72 \div (3 \times 3) = 8$ checks it.

Problem 6

1. $3 \times 2 = 6$, then $4 + 6 = 10$.
2. $20 - 10 = 10$.
3. $2 \times 10 = 20$, not 12.

Problem 7

1. $32 \div 4 = 8$ is the needed grouped factor.
2. $5 + 3 = 8$, so group the addition.
3. $8 \times 4 = 32$.

Problem 8

1. $10 - 4 = 6$.
2. $60 \div 6 = 10$.
3. $10 + 2 = 12$.

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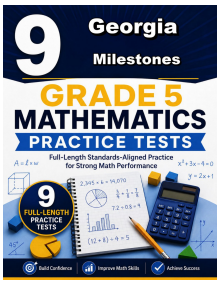

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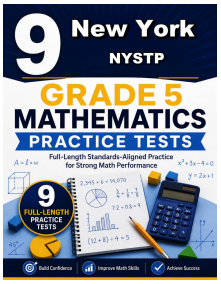

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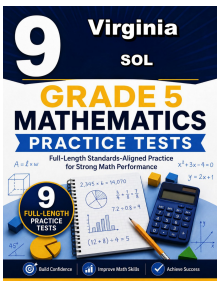

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