Writing and Interpreting Numerical Expressions

Writing and Interpreting Numerical Expressions: Apply, Compare, and Design

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

QUICK REVIEW

Translate the structure before calculating. “Three times the sum of 4 and 5” is $3 \times (4 + 5) = 27$. “Five more than three times 4” is $3 \times 4 + 5 = 17$. The grouping changes what gets multiplied.

Worked example

Write an expression for: four times the sum of 9 and 2. Then evaluate it.

1. The sum is $9 + 2 = 11$, so group it.
2. $4 \times 11 = 44$.
Answer: $4 \times (9 + 2) = 44$.

Practice Problems

Show your thinking.

1. Write one numerical expression for this situation: 6 tables each seat 4 adults and 3 children. Find its value.

2. Write one numerical expression for this situation: 80 dollars pay for 5 kits costing 9 dollars each; find the money left. Find its value.

3. Write one numerical expression for this situation: 56 red and 16 blue cards are shared into 8 equal packs. Find its value.

4. Write one numerical expression for this situation: a 60 cm strip loses 4 equal 7 cm pieces. Find its value.

5. Two groups bring 15 books each. The class adds 8 books just once. Choose $2(15 + 8)$ or $2 \times 15 + 8$ and explain the other expression.

6. After one 12-dollar fee, a fund must pay five teams 12 dollars each. Write one expression for the money needed before the fee.

7. Write one numerical expression for this situation: three trips each carry 8 boxes of 4 books. Find its value.

8. A theater has nine rows of twelve seats and must keep at least 100 seats open. Write an expression for open seats if b seats are blocked, then find the most that can be blocked.

Answer Key

1. $6 \times (4 + 3) = 42$ people.
2. $80 - 5 \times 9 = 35$ dollars.
3. $(56 + 16) \div 8 = 9$ cards per pack.
4. $60 - 4 \times 7 = 32$ cm.
5. $2 \times 15 + 8 = 38$ books.
6. $5 \times 12 + 12 = 72$ dollars.
7. $3 \times (8 \times 4) = 96$ books.
8. Open seats: $9 \times 12 - b$. At most 8 seats can be blocked.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Each table seats $4 + 3 = 7$.
2. $6 \times 7 = 42$ people.

Problem 2

1. Kit cost: $5 \times 9 = 45$ dollars.
2. $80 - 45 = 35$ dollars remain.

Problem 3

1. Total cards: $56 + 16 = 72$.
2. $72 \div 8 = 9$ per pack.

Problem 4

1. Removed: $4 \times 7 = 28$ cm.
2. $60 - 28 = 32$ cm remains.

Problem 5

1. The two groups provide $2 \times 15 = 30$ books.
2. Add the class books once: $30 + 8 = 38$ books.
3. $2(15 + 8)$ would add eight to both groups, counting sixteen extras rather than eight.

Problem 6

1. Teams need $5 \times 12 = 60$ dollars.
2. Add one fee: $60 + 12 = 72$ dollars before the fee.
3. Check: $72 - 12 = 60$ dollars left for the five teams.

Problem 7

1. Each trip carries $8 \times 4 = 32$ books.
2. $3 \times 32 = 96$ books.

Problem 8

1. $9 \times 12 = 108$ seats in all, so subtract b to count open seats.
2. $108 - 100 = 8$ can be blocked while leaving exactly 100 open.
3. Blocking 9 would leave 99, which is below the minimum.

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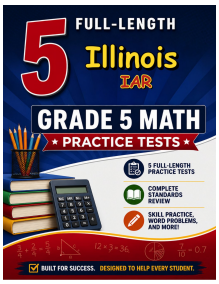

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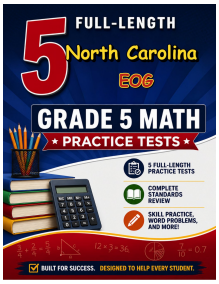

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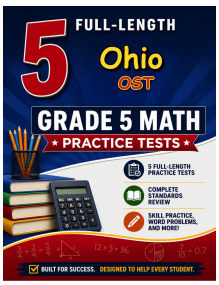

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