

Grade 5 · Numerical Expressions · Test Answer Key

Common Core 5.OA.A.1, 5.OA.A.2 · mathovore.fr

This key gives a full solution and a scoring guide for every question of the numerical expressions test, 20 points in total. Award points for correct steps as well as final answers, and look for the order of work: innermost grouping symbols first.

Grade 5 Common Core: 5.OA.A.1 · 5.OA.A.2

Question 1: Evaluate with parentheses (3 points)

1. Inside the parentheses, subtract: $15 - 9 = 6$. The expression is now 4×6 .
2. Now multiply: $4 \times 6 = 24$. The expression is now 24.

The value is 24.

1. Inside the parentheses, add: $3 + 4 = 7$. The expression is now $56 \div 7$.
2. Now divide: $56 \div 7 = 8$. The expression is now 8.

The value is 8.

1. Inside the parentheses, multiply: $8 \times 7 = 56$. The expression is now $100 - 56$.
2. Now subtract: $100 - 56 = 44$. The expression is now 44.

The value is 44.

Scoring: 1 point for each correct value (24, 8, and 44). A value found by ignoring the parentheses earns 0 points.

Question 2: Nested grouping symbols (3 points)

1. Inside the parentheses, divide: $12 \div 3 = 4$. The expression is now $2 \times [9 + 4]$.
2. Inside the brackets, add: $9 + 4 = 13$. The expression is now 2×13 .
3. Now multiply: $2 \times 13 = 26$. The expression is now 26.

The value is 26.

1. Inside the parentheses, subtract: $9 - 6 = 3$. The expression is now $120 \div \{4 \times [2 + 3]\}$.
2. Inside the brackets, add: $2 + 3 = 5$. The expression is now $120 \div \{4 \times 5\}$.
3. Inside the braces, multiply: $4 \times 5 = 20$. The expression is now $120 \div 20$.

4. Now divide: $120 \div 20 = 6$. The expression is now 6.

The value is 6.

Scoring: part (a) 1 point for 26. Part (b) 1 point for working the innermost parentheses and brackets correctly and 1 point for the final value 6.

Question 3: Write expressions (3 points)

- a. $3 \times (9 + 14)$
- b. $50 - 4 \times 5$. Writing $50 - (4 \times 5)$ is also correct.
- c. $(30 - 12) \div 6$

Scoring: 1 point for each correct expression. Accept equivalent forms that keep the same order of work. For part (a), $3 \times 9 + 14$ earns 0 points.

Question 4: Interpret without evaluating (2 points)

- a. The sum $25 + 17$ is multiplied by 4, so the expression is **4 times as large as** $25 + 17$.
- b. The sum $24 + 9$ is multiplied by $\frac{1}{3}$, a number less than 1, so the expression is **less than** $24 + 9$. It is one third as large.

$25 + 17$	25	17	one group
$4 \times (25 + 17)$	25	17	
	25	17	
	25	17	
	25	17	

Four copies of $25 + 17$ show that $4 \times (25 + 17)$ is 4 times as large as one copy.

Scoring: (a) 1 point for "4 times as large." (b) 1 point for "less than" with a reason about multiplying by a fraction less than 1.

Question 5: Insert parentheses (2 points)

- a. $(3 + 5) \times 4 = 32$, because $8 \times 4 = 32$.
- b. $18 \div (2 + 1) = 6$, because $18 \div 3 = 6$.

$(3 + 5) \times 4 = 32$

$18 \div (2 + 1) = 6$

The fixed equations.

Scoring: 1 point for each correct placement.

Question 6: Farmers market boxes (3 points)

a. $5 \times (8 + 3) - 9$

1. Inside the parentheses, add: $8 + 3 = 11$. The expression is now $5 \times 11 - 9$.
2. Now multiply: $5 \times 11 = 55$. The expression is now $55 - 9$.
3. Now subtract: $55 - 9 = 46$. The expression is now 46.

The value is 46.

Priya has **46 pieces** left.

c. $8 + 3$ is the number of pieces of fruit in one box.

Box 1	8 peaches	3 plums
Box 2	8 peaches	3 plums
Box 3	8 peaches	3 plums
Box 4	8 peaches	3 plums
Box 5	8 peaches	3 plums

Each box has $8 + 3 = 11$ pieces, so 55 pieces in all.

Scoring: (a) 1 point; the parentheses must show that $8 + 3$ is multiplied by 5. (b) 1 point for 46. (c) 1 point for "pieces of fruit in one box."

Question 7: Noah's notebook (2 points)

Noah dropped the parentheses. He divided 48 by 4 only, then added 4.

$$\begin{aligned} &48 \div (4 + 4) \\ &= 48 \div 8 \\ &= 6 \end{aligned}$$

The corrected work.

- a. Noah did not add $4 + 4$ first, so he divided 48 by 4 instead of by 8.
- b. The correct value is **6**.

Scoring: (a) 1 point for saying the parentheses were ignored or that $4 + 4$ should be done first. (b) 1 point for 6.

Question 8: Compare two expressions (2 points)

First: $5 \times (7 - 2)$

1. Inside the parentheses, subtract: $7 - 2 = 5$. The expression is now 5×5 .
2. Now multiply: $5 \times 5 = 25$. The expression is now 25.

The value is 25.

Second: $5 \times 7 - 2$

1. Now multiply: $5 \times 7 = 35$. The expression is now $35 - 2$.
2. Now subtract: $35 - 2 = 33$. The expression is now 33.

The value is 33.

Since 33 is greater than 25, the **second expression** is greater.

Scoring: 1 point for both values (25 and 33), 1 point for naming the greater expression.

Total
20 points