LESSON MAKER PRO

# Grouping Changes Everything

*Evaluate expressions from the inside out.*

**GRADE 5 · MT.5.OA.1**

**MT.5.OA.1** "Use parentheses, brackets, or braces in numerical expressions and evaluate expressions with these symbols using the order of operations."

NAME _____ DATE _____

## ORDER INSIDE GROUPS

When groups are nested, start with the innermost group and work outward. Within each group, multiply and divide from left to right before adding and subtracting from left to right.

**WORKED EXAMPLE**

Evaluate 41 - [29 - (7 + 5)].

1. First, 7 + 5 = 12.
2. Next, 29 - 12 = 17.
3. Then, 41 - 17 = 24.

**Answer: 24**

## PRACTICE 6 problems

**1** Evaluate 28 - (9 + 4).

**ANSWER** _____

**2** Evaluate 3 × [16 - (2 + 4)].

**ANSWER** _____

**3** Evaluate {18 + [20 / (2 + 2)]} × 2.

**ANSWER** _____

**4** Evaluate 48 / (2 × 3) + 9.

**ANSWER** _____

**5** Evaluate [32 - 2 × (9 + 3)] / 4.

**ANSWER** _____

**6** Evaluate 70 - {3 × [15 - (10 / 2)]}.

**ANSWER** _____

## APPLY IT Show your work

**1** At an arcade, Maya wins 9 games that earn 4 tickets each. She spends 6 tickets on a sticker, then splits the rest equally between 2 friends. Write one expression with grouping symbols and find how many tickets each friend gets.

WORK SPACE

**ANSWER** _____

**2** At a school fair, 4 friends each buy 3 photo strips for 2 dollars per strip. They use a 6-dollar coupon on the total. Write one expression with grouping symbols and find how much they pay altogether.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

Evaluate both expressions. Then explain why their values differ: 48 / [2 × (3 + 1)] and (48 / 2) × (3 + 1).

WORK SPACE AND ANSWER

**ANSWER KEY**

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**GRADE 5 · MT.5.OA.1**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | Evaluate 28 - (9 + 4). | **15** |
| 2 | Evaluate 3 × [16 - (2 + 4)]. | **30** |
| 3 | Evaluate {18 + [20 / (2 + 2)]} × 2. | **46** |
| 4 | Evaluate 48 / (2 × 3) + 9. | **17** |
| 5 | Evaluate [32 - 2 × (9 + 3)] / 4. | **2** |
| 6 | Evaluate 70 - {3 × [15 - (10 / 2)]}. | **40** |

## PART 2 · APPLY IT

1. **(9 × 4 - 6) / 2 = 15 tickets per friend** Maya earns 36 tickets and has 30 left after buying the sticker. Dividing 30 by 2 gives each friend 15 tickets.
2. **4 × (3 × 2) - 6 = 18 dollars** Each friend spends 6 dollars before the coupon, so the four strips of purchases total 24 dollars. Subtract the 6-dollar coupon to get 18 dollars.

## CHALLENGE

**The first expression equals 6, and the second equals 96. In the first, 48 is divided by the entire product 2 × 4. In the second, 48 is divided by 2 before the result is multiplied by 4.**

Accept equivalent expressions for the word problems if they use grouping symbols and give the correct result. For the challenge, accept explanations that correctly identify what 48 is divided by in each expression.