

# Order of Operations

Grade 5 Math • Section 3.1

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 17

## Quick Review and Helpful Hints

**PEMDAS:** Parentheses → Exponents → Multiplication & Division (left to right) → Addition & Subtraction (left to right).

Multiplication and division are done in the **same** step, working left to right. Same for addition and subtraction.

Always work inside parentheses first, then exponents, before multiplying or dividing.

**Example:** Evaluate  $3 + 4 \times (8 - 2) \div 3$ .

Parentheses first:  $8 - 2 = 6$ . Now the expression is  $3 + 4 \times 6 \div 3$ . Multiply:  $4 \times 6 = 24$ . Divide:  $24 \div 3 = 8$ . Add:  $3 + 8 = 11$ .

**Answer:** 11

## Practice Problems

Evaluate each expression using the correct order of operations.

- |                                      |                                      |                                       |
|--------------------------------------|--------------------------------------|---------------------------------------|
| 1. $6 + 3 \times 4 =$ _____          | 6. $9 + (12 - 4) \times 2 =$ _____   | 11. $100 - 5 \times 3^2 =$ _____      |
| 2. $20 - 8 \div 2 =$ _____           | 7. $5 \times 6 - 18 \div 3 =$ _____  | 12. $8 + 56 \div 7 - 2 =$ _____       |
| 3. $(5 + 3) \times 2 =$ _____        | 8. $(15 - 9) \times (2 + 4) =$ _____ | 13. $4 \times (9 - 3) + 10 =$ _____   |
| 4. $7 \times 2 + 5 \times 3 =$ _____ | 9. $3 + 2^3 \times 4 =$ _____        | 14. $60 \div 10 + 3 \times 5 =$ _____ |
| 5. $36 \div 6 + 4 =$ _____           | 10. $48 \div (4 + 4) =$ _____        | 15. $2^4 - 6 \times 2 + 1 =$ _____    |

## Word Problems

16. Leo buys 3 books at \$8 each and 2 pens at \$3 each. Write a numerical expression and evaluate:  $3 \times 8 + 2 \times 3$ .

\_\_\_\_\_

17. Maya says  $2 + 3 \times 4 = 20$ . Javier says the answer is 14. Who is correct? Explain using the order of operations.

\_\_\_\_\_



## Answer Keys

- |       |                |
|-------|----------------|
| 1. 18 | 10. 6          |
| 2. 16 | 11. 55         |
| 3. 16 | 12. 14         |
| 4. 29 | 13. 34         |
| 5. 10 | 14. 21         |
| 6. 25 | 15. 5          |
| 7. 24 | 16. \$30       |
| 8. 36 | 17. Javier; 14 |
| 9. 35 |                |

### Step-by-Step Explanations

- Start with the main idea. For order of operations, follow the order of operations in  $6 + 3 \times 4$ . The value is 18. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Keep the work tidy. For order of operations, follow the order of operations in  $20 - 8 \div 2$ . The value is 16. Work from the inside out when you see parentheses, brackets, or braces.
- Look at what the numbers mean. For order of operations, follow the order of operations in  $(5 + 3) \times 2$ . The value is 16. One careful line at a time is better than trying to do the whole expression mentally.
- Use the setup first. For order of operations, follow the order of operations in  $7 \times 2 + 5 \times 3$ . The value is 29. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Check the size of the answer. For order of operations, follow the order of operations in  $36 \div 6 + 4$ . The value is 10. Work from the inside out when you see parentheses, brackets, or braces.
- Match the operation to the words. For order of operations, follow the order of operations in  $9 + (12 - 4) \times 2$ . The value is 25. One careful line at a time is better than trying to do the whole expression mentally.
- Write the important values first. For order of operations, follow the order of operations in  $5 \times 6 - 18 \div 3$ . The value is 24. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Follow the pattern carefully. For order of operations, follow the order of operations in  $(15 - 9) \times (2 + 4)$ . The value is 36. Work from the inside out when you see parentheses, brackets, or braces.
- Start with the main idea. For order of operations, follow the order of operations in  $3 + 2^3 \times 4$ . The value is 35. One careful line at a time is better than

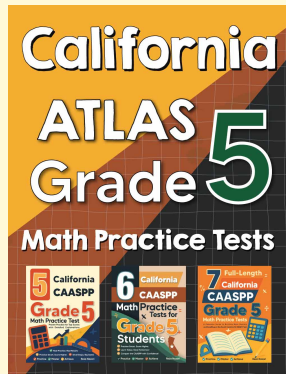
trying to do the whole expression mentally.

- Keep the work tidy. For order of operations, follow the order of operations in  $48 \div (4 + 4)$ . The value is 6. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Look at what the numbers mean. For order of operations, follow the order of operations in  $100 - 5 \times 3^2$ . The value is 55. Work from the inside out when you see parentheses, brackets, or braces.
- Use the setup first. For order of operations, follow the order of operations in  $8 + 56 \div 7 - 2$ . The value is 14. One careful line at a time is better than trying to do the whole expression mentally.
- Check the size of the answer. For order of operations, follow the order of operations in  $4 \times (9 - 3) + 10$ . The value is 34. Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Match the operation to the words. For order of operations, follow the order of operations in  $60 \div 10 + 3 \times 5$ . The value is 21. Work from the inside out when you see parentheses, brackets, or braces.
- Write the important values first. For order of operations, follow the order of operations in  $2^4 - 6 \times 2 + 1$ . The value is 5. One careful line at a time is better than trying to do the whole expression mentally.
- Follow the pattern carefully. For order of operations, evaluate  $3 \times 8 + 2 \times 3 = 24 + 6 = 30$ . Grouped expressions come first, then exponents, then multiplication or division before addition or subtraction.
- Start with the main idea. For order of operations, multiplication comes before addition:  $2 + 3 \times 4 = 2 + 12 = 14$ . Work from the inside out when you see parentheses, brackets, or braces.



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