

# Order of Operations

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

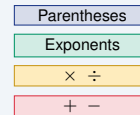
Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 18

## Quick Review and Helpful Hints

Follow **PEMDAS**: *Parentheses* first, then *Exponents*, then *Multiplication and Division* from left to right, then *Addition and Subtraction* from left to right. Multiplication and division have equal priority, and so do addition and subtraction.

▷ **Example:** Evaluate  $2 + 3 \times 4$ . **Work:** Multiplication comes before addition, so do  $3 \times 4 = 12$  first, then add:  $2 + 12$ . ★ **Answer:** 14



Work top to bottom (PEMDAS).

## ◆ Practice Problems

Evaluate each expression.

1.  $2 + 3 \times 4$  \_\_\_\_\_

8.  $4^2 - 6$  \_\_\_\_\_

2.  $(2 + 3) \times 4$  \_\_\_\_\_

9.  $(8 - 3)^2$  \_\_\_\_\_

3.  $10 - 2 \times 3$  \_\_\_\_\_

10.  $6 + 4 \times 2 - 3$  \_\_\_\_\_

4.  $12 \div 4 + 1$  \_\_\_\_\_

11.  $2 \times 3^2$  \_\_\_\_\_

5.  $5 + 2^2$  \_\_\_\_\_

12.  $18 \div (3 + 6)$  \_\_\_\_\_

6.  $3 \times (4 + 1)$  \_\_\_\_\_

13.  $5 \times 2 + 3 \times 4$  \_\_\_\_\_

7.  $20 - 6 \div 2$  \_\_\_\_\_

14.  $100 - 5^2 \times 2$  \_\_\_\_\_

## ◆ Word Problems

15. You buy 3 shirts at \$12 each and one hat for \$8. What is the total cost? \_\_\_\_\_

16. A recipe needs 2 cups plus 3 batches of 4 cups each. How many cups in all? \_\_\_\_\_

17. A shelter has 15 donated blankets. After 3 are set aside for washing, the rest are packed evenly into 4 emergency kits. How many blankets go in each kit? \_\_\_\_\_

18. A parking garage charges a \$5 entry fee plus \$2 per hour. If a car is parked from 6 p.m. to 10 p.m., what is the total charge? \_\_\_\_\_



## Answer Keys

- |                                    |                                     |  |
|------------------------------------|-------------------------------------|--|
| 1. <input type="text" value="14"/> | 7. <input type="text" value="17"/>  | 13. <input type="text" value="22"/>      |
| 2. <input type="text" value="20"/> | 8. <input type="text" value="10"/>  | 14. <input type="text" value="50"/>      |
| 3. <input type="text" value="4"/>  | 9. <input type="text" value="25"/>  | 15. <input type="text" value="\$44"/>    |
| 4. <input type="text" value="4"/>  | 10. <input type="text" value="11"/> | 16. <input type="text" value="14 cups"/> |
| 5. <input type="text" value="9"/>  | 11. <input type="text" value="18"/> | 17. <input type="text" value="3"/>       |
| 6. <input type="text" value="15"/> | 12. <input type="text" value="2"/>  | 18. <input type="text" value="13"/>      |

### Step-by-Step Explanations

**1.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Remember PEMDAS – multiplication before addition. Do  $3 \times 4 = 12$  first, then add:  $2 + 12 = 14$ . So the final answer is 14.

**2.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Parentheses come first:  $2 + 3 = 5$ , then multiply:  $5 \times 4 = 20$ . So the final answer is 20.

**3.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply before subtracting:  $2 \times 3 = 6$ , then  $10 - 6 = 4$ . So the final answer is 4.

**4.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide before adding:  $12 \div 4 = 3$ , then  $3 + 1 = 4$ . So the final answer is 4.

**5.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Exponents before addition:  $2^2 = 4$ , then  $5 + 4 = 9$ . So the final answer is 9.

**6.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Inside the parentheses first:  $4 + 1 = 5$ , then  $3 \times 5 = 15$ . So the final answer is 15.

**7.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide before subtracting:  $6 \div 2 = 3$ , then  $20 - 3 = 17$ . So the final answer is 17.

**8.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Exponent first:  $4^2 = 16$ , then  $16 - 6 = 10$ . So the final answer is 10.

**9.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Parentheses first:  $8 - 3 = 5$ , then square:  $5^2 = 25$ . So the final answer is 25.

**10.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply first:  $4 \times 2 = 8$ . Then left to right:  $6 + 8 - 3 = 11$ . So the final answer is 11.

**11.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Exponent before multiplying:  $3^2 = 9$ , then  $2 \times 9 = 18$ . So the final answer is 18.

**12.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Parentheses first:  $3 + 6 = 9$ , then  $18 \div 9 = 2$ . So the final answer is 2.

**13.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Do both multiplications first:  $5 \times 2 = 10$  and  $3 \times 4 = 12$ , then add:  $10 + 12 = 22$ . So the final answer is 22.

**14.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Exponent first:  $5^2 = 25$ . Then multiply:  $25 \times 2 = 50$ . Finally subtract:  $100 - 50 = 50$ . So the final answer is 50.

**15.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply before adding:  $3 \times 12 = 36$  for the shirts, plus \$8 for the hat:  $36 + 8 = \$44$ . So the final answer is \$44.

**16.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply first:  $3 \times 4 = 12$  cups for the batches, plus the 2:  $2 + 12 = 14$  cups. So the final answer is 14 cups.

**17.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Parentheses first:  $15 - 3 = 12$ , then divide:  $12 \div 4 = 3$ . So the final answer is 3.

**18.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Parentheses first:  $10 - 6 = 4$ . Then multiply:  $2 \times 4 = 8$ . Finally add:  $5 + 8 = 13$ . So the final answer is 13.



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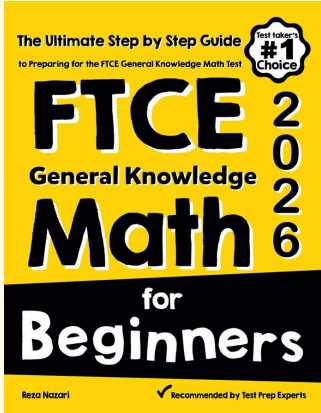
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