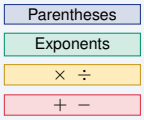
Order of Operations

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. $2 + 3 \times 4$ _____

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

3. $10 - 2 \times 3$ _____

4. $12 \div 4 + 1$ _____

5. $5 + 2^2$ _____

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

7. $20 - 6 \div 2$ _____

8. $4^2 - 6$ _____

9. $(8 - 3)^2$ _____

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

11. 2×3^2 _____

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

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

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. 14	**7.** 17	**13.** 22
2. 20	**8.** 10	**14.** 50
3. 4	**9.** 25	**15.** $\$44$
4. 4	**10.** 11	**16.** 14 cups
5. 9	**11.** 18	**17.** 3
6. 15	**12.** 2	**18.** 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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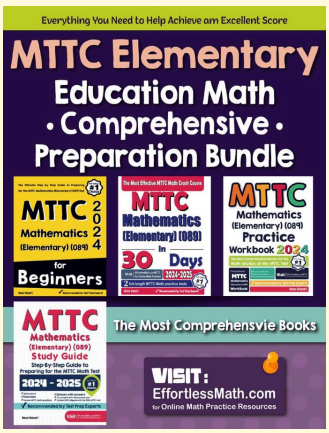

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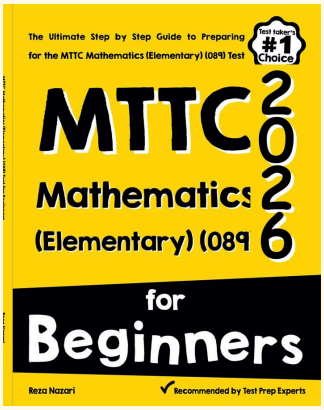

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