

Introduction to Order of Operations

The order of operations is a fundamental concept in mathematics that dictates the order in which mathematical operations should be performed when there are multiple operations in an expression. The order of operations is as follows:

1. Parentheses: Evaluate expressions inside parentheses first.
2. Exponents: Evaluate any exponential expressions next (for example, 2^3).
3. Multiplication and Division: Evaluate multiplication and division operations from left to right.
4. Addition and Subtraction: Finally, evaluate any addition and subtraction operations from left to right.

Section 1: Multiple Choice Questions

Choose the correct answer for each question.

Question 1: What is the correct order of operations to evaluate the expression $2 + 3 \times 4$?

1. A) Parentheses, Exponents, Multiplication and Division, Addition and Subtraction
2. B) Exponents, Parentheses, Multiplication and Division, Addition and Subtraction
3. C) Multiplication and Division, Addition and Subtraction, Parentheses, Exponents
4. D) Addition and Subtraction, Multiplication and Division, Parentheses, Exponents

Question 2: Which of the following expressions is equal to $12 \div 3 + 2$?

1. A) $4 + 2$
2. B) 4×2
3. C) $12 \div 3 - 2$
4. D) $12 \div 3 \times 2$

Question 3: What is the value of the expression $5 - 2 + 3 \times 2$?

1. A) 5
2. B) 7
3. C) 9
4. D) 11

Section 1: Multiple Choice Questions (continued)

Choose the correct answer for each question.

Question 4: Which of the following expressions is equal to $9 - 3 + 2 \times 2$?

1. A) $9 - 3 + 4$
2. B) $9 - 3 - 4$
3. C) $9 + 3 + 4$
4. D) $9 + 3 - 4$

Question 5: What is the correct order of operations to evaluate the expression $10 - 2 + 3 \times 2 - 1$?

1. A) Parentheses, Exponents, Multiplication and Division, Addition and Subtraction
2. B) Exponents, Parentheses, Multiplication and Division, Addition and Subtraction
3. C) Multiplication and Division, Addition and Subtraction, Parentheses, Exponents
4. D) Addition and Subtraction, Multiplication and Division, Parentheses, Exponents

Section 2: Short Answer Questions

Show your work and simplify each expression.

Question 6: Simplify the expression $2 \times 3 + 4 - 1$ using the order of operations.

Question 7: Evaluate the expression $12 \div 3 + 2 \times 2$ using the order of operations.

Section 2: Short Answer Questions (continued)

Show your work and simplify each expression.

Question 8: Simplify the expression $5 - 2 + 3 \times 2$ using the order of operations.

Question 9: Evaluate the expression $9 - 3 + 2 \times 2$ using the order of operations.

Question 10: Simplify the expression $10 - 2 + 3 \times 2 - 1$ using the order of operations.

Section 3: Interactive Problem-Solving

Use the order of operations to simplify each expression.

Question 11: Simplify the expression $2 \times (3 + 4) - 1$ using the order of operations.

Question 12: Evaluate the expression $(12 \div 3) + 2 \times 2$ using the order of operations.

Section 3: Interactive Problem-Solving (continued)

Use the order of operations to simplify each expression.

Question 13: Simplify the expression $5 - (2 + 3) \times 2$ using the order of operations.

Question 14: Evaluate the expression $(9 - 3) + 2 \times 2$ using the order of operations.

Question 15: Simplify the expression $10 - (2 + 3) \times 2 - 1$ using the order of operations.

Conclusion

This worksheet provides students with the opportunity to practice and apply the order of operations to simplify expressions and evaluate mathematical expressions. By completing these questions and activities, students will demonstrate their understanding of the order of operations and their ability to apply it to solve mathematical problems.

Answer Key

Section 1: Multiple Choice Questions

1. A) Parentheses, Exponents, Multiplication and Division, Addition and Subtraction
2. A) $4 + 2$
3. D) 11
4. A) $9 - 3 + 4$
5. A) Parentheses, Exponents, Multiplication and Division, Addition and Subtraction

Section 2: Short Answer Questions

6. $2 \times 3 + 4 - 1 = 6 + 4 - 1 = 9$
7. $12 \div 3 + 2 \times 2 = 4 + 4 = 8$
8. $5 - 2 + 3 \times 2 = 5 - 2 + 6 = 9$
9. $9 - 3 + 2 \times 2 = 9 - 3 + 4 = 10$
10. $10 - 2 + 3 \times 2 - 1 = 10 - 2 + 6 - 1 = 13$

Answer Key (continued)

Section 3: Interactive Problem-Solving

11. $2 \times (3 + 4) - 1 = 2 \times 7 - 1 = 14 - 1 = 13$
12. $(12 \div 3) + 2 \times 2 = 4 + 4 = 8$
13. $5 - (2 + 3) \times 2 = 5 - 5 \times 2 = 5 - 10 = -5$
14. $(9 - 3) + 2 \times 2 = 6 + 4 = 10$
15. $10 - (2 + 3) \times 2 - 1 = 10 - 5 \times 2 - 1 = 10 - 10 - 1 = -1$

