Evaluating Algebraic Expressions Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is a variable in an algebraic expression?

undefined. A) A fixed number

undefined. B) A symbol representing an unknown value ✓

undefined. C) A mathematical operation

undefined. D) A number that multiplies a variable

A variable is a symbol that represents an unknown value.

Which of the following are components of an algebraic expression? (Select all that apply)

undefined. A) Variables ✓

undefined. B) Coefficients ✓

undefined. C) Constants ✓

undefined. D) Equations

Components include variables, coefficients, and constants.

Explain the role of coefficients in an algebraic expression.

Coefficients are numbers that multiply the variables in an expression.

List the order of operations used in evaluating algebraic expressions.

1. What is the first step?

Parentheses

2. What is the second step?

Exponents

3. What is the third step?

Multiplication and Division

The order of operations is Parentheses, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right).

Part 2: Comprehension and Application

Why is it important to follow the order of operations when evaluating expressions?

undefined. A) To simplify the expression

undefined. B) To ensure accurate results ✓

undefined. C) To make the expression longer

undefined. D) To eliminate variables

Following the order of operations ensures accurate results when evaluating expressions.

Which of the following statements are true about constants in algebraic expressions? (Select all that apply)

undefined. A) They can change values

undefined. B) They are fixed numbers ✓

undefined. C) They multiply variables

undefined. D) They do not change ✓

Constants are fixed numbers that do not change.

Describe how substituting values for variables can change the outcome of an algebraic expression.

Substituting values for variables changes the expression's outcome by replacing the unknowns with specific numbers.

If x = 3, what is the value of the expression 2x + 5?

undefined. A) 8

undefined. B) 11 ✓

undefined. C) 10

undefined. D) 9

The value of the expression is 11 when x = 3.

Given the expression 4a - 3 b + 7, what is the result when a = 2 and b = 1? (Select all that apply)

undefined. A) 12
undefined. B) 9 ✓
undefined. C) 15
undefined. D) 10

The result is 9 when a = 2 and b = 1.

Evaluate the expression 3x^2 - 4x + 1 for x = -2.

The evaluated expression results in 27 when x = -2.

Part 3: Analysis, Evaluation, and Creation

Which part of the expression 5x^2 + 3x - 7 is the quadratic term?

undefined. A) 5x^2 ✓
undefined. B) 3x
undefined. C) -7
undefined. D) None of the above

The quadratic term is 5x^2.

Analyze the expression 2(x + 3) - 4 and identify which operations are performed first. (Select all that apply)

undefined. A) Addition ✓
undefined. B) Multiplication ✓
undefined. C) Subtraction
undefined. D) Division

The first operations performed are addition and multiplication.

Break down the expression 6y - 2(y + 3) and simplify it step by step.

The expression simplifies to 4y - 6 after distribution and combining like terms.

Which expression is equivalent to 2(x + 4) - 3x?

undefined. A) 2x + 8 - 3x ✓

undefined. B) 2x + 4 - 3x

undefined. C) 2x + 8 - x

undefined. D) x + 8

The equivalent expression is 2x + 8 - 3x.

Evaluate the following scenario: If the expression 3(x - 2) + 4 is used to calculate the cost of x items, which statements are true? (Select all that apply)

undefined. A) The expression represents a linear relationship. ✓

undefined. B) The cost decreases as x increases.

undefined. C) The expression simplifies to 3x - 2.

undefined. D) The expression includes a constant cost of 4. ✓

The expression represents a linear relationship and includes a constant cost of 4.

Create an algebraic expression that represents the total cost of buying x apples at $2 each and y bananas at $1.50 each, and evaluate it for x = 5 and y = 3.

The expression is 2x + 1.5y, and evaluating it for x = 5 and y = 3 gives a total cost of $15.