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Evaluating Algebraic Expressions Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is a variable in an algebraic expression?

Hint: Think about what represents an unknown in math.

◯ A) A fixed number
◯ **B) A symbol representing an unknown value** ✓
◯ C) A mathematical operation
◯ 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)

Hint: Consider the parts that make up an expression.

☐ **A) Variables** ✓
☐ **B) Coefficients** ✓
☐ **C) Constants** ✓
☐ D) Equations

> Components include variables, coefficients, and constants.

Explain the role of coefficients in an algebraic expression.

Hint: Think about how coefficients affect the value of terms.

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> **Coefficients are numbers that multiply the variables in an expression.**

List the order of operations used in evaluating algebraic expressions.

Hint: Remember the acronym PEMDAS.

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?

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Hint: Consider the impact on the final result.

⃝ A) To simplify the expression
⃝ **B) To ensure accurate results ✓**
⃝ C) To make the expression longer
⃝ 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)

Hint: Think about the nature of constants.

☐ A) They can change values
☐ **B) They are fixed numbers ✓**
☐ C) They multiply variables
☐ **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.

Hint: Consider how different values affect the 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?

Hint: Substitute 3 for x and calculate.

⃝ A) 8
⃝ **B) 11 ✓**
⃝ C) 10
⃝ D) 9

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> 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)

Hint: Substitute the values and simplify.

- ☐ A) 12
- ☐ **B) 9 ✔**
- ☐ C) 15
- ☐ D) 10

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

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

Hint: Substitute -2 for x and calculate.

> **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?

Hint: Identify the term with the highest exponent.

- ○ **A) 5x^2 ✔**
- ○ B) 3x
- ○ C) -7
- ○ D) None of the above

> The quadratic term is 5x^2.

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

Hint: Consider the order of operations.

☐ **A) Addition** ✓
☐ **B) Multiplication** ✓
☐ C) Subtraction
☐ D) Division

| The first operations performed are addition and multiplication.

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

Hint: Consider distributing and combining like terms.

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

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

Hint: Distribute and combine like terms.

◯ **A) 2x + 8 - 3x** ✓
◯ B) 2x + 4 - 3x
◯ C) 2x + 8 - x
◯ 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)

Hint: Think about the implications of the expression.

☐ **A) The expression represents a linear relationship.** ✓

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☐ B) The cost decreases as x increases.

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

☐ **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.

Hint: Consider how to express the total cost mathematically.

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

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