Simplifying Expressions Worksheet

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Part 1: Building a Foundation

Which of the following is a variable in the expression 3x + 5?

Hint: Look for the symbol that represents an unknown value.

- ◯ 3
- ◯ x
- ◯ 5
- ◯ +

Identify the like terms in the expression 4y + 3x - 2y + 7.

Hint: Like terms have the same variable raised to the same power.

- ☐ 4y and 3x
- ☐ 4y and -2y
- ☐ 3x and 7
- ☐ -2y and 7

Explain what is meant by the term 'coefficient' in an algebraic expression.

Hint: Consider what number is multiplied by the variable.

List the components of the expression $5a^2 + 3a - 7$.

Hint: Identify variables, coefficients, and constants.

1. Variable(s):

2. Coefficient(s):

3. Constant(s):

Which property is used in the expression 2(x + 3) = 2x + 6?

Hint: Think about how the terms are distributed.

- ◯ Communtative Property
- ◯ Associative Property
- ◯ Distributative Property
- ◯ Identity Property

Part 2: comprehension and Application

What is the simplified form of the expression 6m + 4m?

Hint: Combine the like terms.

- ◯ 10m
- ◯ 2m
- ◯ 24m
- ◯ 12m

Which of the following expressions are equivalent to 3(x + 4)?

Hint: Distribute the 3 across the terms in the parentheses.

- ☐ 3x + 12
- ☐ 3x + 4
- ☐ x + 12
- ☐ 12x + 3

Describe how you would simplify the expression 5(2y - 3) + 4y.

Hint: Consider distributing first and then combining like terms.

If a = 2, what is the value of the expression $3a^2 + 4a - 5$?

Hint: Substitute the value of 'a' into the expression.

- ◯ 15
- ◯ 19
- ◯ 23
- ◯ 27

Which of the following expressions can be factored using the difference of squares?

Hint: Look for expressions in the form $a^2 - b^2$.

- ☐ $x^2 - 9$
- ☐ $x^2 + 9$
- ☐ $4x^2 - 16$
- ☐ $x^2 - 4x + 4$

Apply the distributative property to simplify the expression 7(3x - 2) - 5x.

Hint: Distribute 7 to both terms in the parentheses first.

Part 3: Analysis, Evaluation, and Creation

Which expression is the result of combining like terms in 2x + 3y - x + 4y?

Hint: Look for terms that have the same variable.

- ◯ x + 7y
- ◯ 3x + 7y
- ◯ x + y
- ◯ 3x + y

Analyze the expression 4(a + b) - 2(a - b). Which of the following are correct steps in simplifying it?

Hint: Consider distributing and combining like terms.

- ☐ 4a + 4y - 2a + 2y
- ☐ 2a + 6y
- ☐ 4a - 2a + 4y - 2y
- ☐ 2a + 2y

Break down the expression $3x^2 + 6x + 9$ into its simplest form by factoring.

Hint: Look for common factors in the terms.

Evaluate the expression $2(x - 3)^2 + 4$ when x = 5.

Hint: Substitute the value of 'x' and simplify.

- ◯ 12
- ◯ 16
- ◯ 20
- ◯ 24

Which of the following expressions are equivalent to $(x + 2)^2$?

Hint: Expand the expression to find equivalent forms.

- [ ] $x^2 + 4$
- [ ] $x^2 + 4x + 4$
- [ ] $x^2 + 2x + 4$
- [ ] $x^2 + 2x + 4$

Create an algebraic expression that represents the perimeter of a rectangle with length (2x + 3) and width (x - 1). Simplify your expression.

Hint: Use the formula for perimeter and combine like terms.

Design an expression that involves both the distributative property and combining like terms. Then, simplify your expression.

Hint: Create an expression that can be simplified using both techniques.

1. Original Expression:

2. Simplified Expression: