Algebra 1 Worksheets

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Part 1: Foundational Knowledge

What is the value of the expression \(3x + 5\) when \(x = 2\)?

Hint: Substitute x with 2 in the expression.

- ◯ A) 11
- ◯ B) 10
- ◯ C) 9
- ◯ D) 8

Which of the following are like terms? (Select all that apply)

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

- ☐ A) 4x
- ☐ B) 5y
- ☐ C) 7x
- ☐ D) 3x^2

Explain the order of operations and why it is important in evaluating expressions.

Hint: Remember the acronym PEMDAS.

Identify the coefficient and constant term in the expression \(7x + 4\).

Hint: The coefficient is the number in front of the variable.

1. What is the coefficient?

2. What is the constant term?

Part 2: comprehension

Which equation represents a line with a slope of 3 and a y-intercept of -2?

Hint: Recall the slope-intercept form of a line.

- ◯ A) y = 3x - 2
- ◯ B) y = -2x + 3
- ◯ C) y = 2x - 3
- ◯ D) y = -3x + 2

Which of the following are solutions to the inequality \(x + 3 > 5\)? (Select all that apply)

Hint: Solve the inequality for x first.

- ☐ A) x = 1
- ☐ B) x = 2
- ☐ C) x = 3
- ☐ D) x = 4

Describe how the graph of the function \(y = 2x + 1\) would change if the equation is modified to \(y = 2x - 3\).

Hint: Consider the impact of changing the y-intercept.

Part 3: Application

If the function \(f(x) = 2x^2 - 3x + 5\), what is \(f(2)\)?

Hint: Substitute x with 2 in the function.

- ◯ A) 7
- ◯ B) 9
- ◯ C) 11
- ◯ D) 13

Which of the following expressions can be factored as \((x + 2)(x - 3)\)? (Select all that apply)

Hint: Expand the expression to check for equivalence.

- ☐ A) x^2 - x - 6
- ☐ B) x^2 - x + 6
- ☐ C) x^2 + x - 6
- ☐ D) x^2 - 5x + 6

Solve the system of equations using the substitution method: \(y = 2x + 3\) and \(3x + y = 12\).

Hint: Substitute the expression for y into the second equation.

Part 4: Analysis

Which of the following graphs represents the solution to the inequality \(y < 2x + 1\)?

Hint: Consider the direction of shading in relation to the line.

- ◯ A) A line with shading above
- ◯ B) A line with shading below
- ◯ C) A dashed line with shading above

◯ D) A dashed line with shading below

Analyze the expression \(x^2 - 4x + 4\). Which of the following statements are true? (Select all that apply)

Hint: Consider the properties of quadratic expressions.

☐ A) It can be factored as (x - 2)^2
☐ B) It has a double root at x = 2
☐ C) It represents a parabola opening upwards
☐ D) It has roots at x = -2 and x = 2

Compare and contrast the graphs of \(y = x^2\) and \(y = -x^2\). Discuss their similarities and differences.

Hint: Think about the direction of the parabolas.

Part 5: Evaluation and Creation

Which of the following statements best evaluates the function \(f(x) = 3x^2 - 6x + 2\) for its vertex form?

Hint: Consider how to complete the square.

◯ A) f(x) = 3(x - 1)^2 - 1
◯ B) f(x) = 3(x + 1)^2 + 1
◯ C) f(x) = 3(x - 1)^2 + 1
◯ D) f(x) = 3(x + 1)^2 - 1

Create a quadratic equation with roots at \(x = 3\) and \(x = -2\). Which of the following equations could represent this scenario? (Select all that apply)

Hint: Use the factored form of a quadratic to find the equation.

☐ A) x^2 - x - 6 = 0

- [ ] B) x^2 - x + 6 = 0
- [ ] C) x^2 - x - 6 = 0
- [ ] D) x^2 - x + 6 = 0

Design a real-world problem that can be modeled by the equation \(2x + 3y = 12\). Explain the scenario and how this equation applies.

Hint: Think about a situation involving two variables.