

## Algebra One Worksheets Answer Key PDF

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### Part 1: Building a Foundation

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**What is the degree of the polynomial  $(3x^4 - 2x^3 + x - 5)$ ?**

undefined. A) 1

undefined. B) 2

undefined. C) 3

**undefined. D) 4 ✓**

The degree of the polynomial is determined by the highest power of  $x$ , which is 4.

**Which of the following are like terms? Select all that apply.**

**undefined. A)  $(5x^2)$  ✓**

undefined. B)  $(3x)$

**undefined. C)  $(7x^2)$  ✓**

undefined. D)  $(2x)$

Like terms include terms that have the same variable and exponent.

**Explain the difference between a linear equation and a quadratic equation.**

**A linear equation has a degree of 1, while a quadratic equation has a degree of 2.**

**List the steps to solve a linear equation in one variable.**

1. Step 1

**Simplify both sides of the equation.**

2. Step 2

**Isolate the variable on one side.**

### 3. Step 3

#### Solve for the variable.

The steps typically include simplifying both sides, isolating the variable, and solving for the variable.

#### Which property is used in the expression $(a(b + c) = ab + ac)$ ?

undefined. A) Commutative Property

undefined. B) Associative Property

**undefined. C) Distributive Property ✓**

undefined. D) Identity Property

This expression demonstrates the Distributive Property.

## Part 2: Understanding and Application

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#### If $f(x) = 2x + 3$ , what is $f(4)$ ?

undefined. A) 5

undefined. B) 8

**undefined. C) 11 ✓**

undefined. D) 15

To find  $f(4)$ , substitute 4 into the function and simplify.

#### Which of the following statements about the function $f(x) = x^2 - 4$ are true? Select all that apply.

**undefined. A) The graph is a parabola. ✓**

undefined. B) The vertex is at the origin.

undefined. C) The function has no real roots.

**undefined. D) The function is symmetric about the y-axis. ✓**

The true statements relate to the characteristics of the quadratic function.

#### Describe how you would graph the inequality $y > 2x + 1$ on a coordinate plane.

**Graph the line  $y = 2x + 1$  and shade the area above it.**

Solve for  $x$  in the equation  $3x - 7 = 2x + 5$ .

undefined. A) 12

undefined. B) -12

undefined. C) 7

undefined. D) -7 ✓

To solve for  $x$ , rearrange the equation and simplify.

Which of the following are solutions to the inequality  $x^2 - 9 < 0$ ? Select all that apply.

undefined. A)  $x = -4$

undefined. B)  $x = -2$  ✓

undefined. C)  $x = 0$

undefined. D)  $x = 3$  ✓

The solutions are the values of  $x$  that satisfy the inequality.

A rectangle has a length that is 3 times its width. If the perimeter is 48 units, find the dimensions of the rectangle.

Let width be  $w$ , then length is  $3w$ . Set up the equation  $2(w + 3w) = 48$ .

### Part 3: Analysis, Evaluation, and Creation

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What is the axis of symmetry for the quadratic function  $y = x^2 - 6x + 8$ ?

undefined. A)  $x = -3$

undefined. B)  $x = 3$  ✓

undefined. C)  $x = 6$

undefined. D)  $x = -6$

The axis of symmetry can be found using the vertex formula.

Analyze the polynomial  $x^3 - 4x^2 + 4x$ . Which of the following are true? Select all that apply.

undefined. A) It can be factored as  $x(x - 2)^2$ . ✓

undefined. B) It has a double root at  $(x = 2)$ . ✓

undefined. C) It has a root at  $(x = 0)$ . ✓

undefined. D) It is a quadratic polynomial.

The true statements relate to the factorization and roots of the polynomial.

**Explain how the graph of  $(y = (x - 2)^2)$  differs from the graph of  $(y = x^2)$ .**

**The graph of  $(y = (x - 2)^2)$  is shifted 2 units to the right compared to  $(y = x^2)$ .**

**Evaluate the expression  $(\frac{2x^2 - 8}{x - 2})$  for  $(x = 4)$ .**

undefined. A) 0

undefined. B) 4

undefined. C) 8 ✓

undefined. D) 16

Evaluate the expression by substituting  $x$  and simplifying.

**Which of the following transformations will change the graph of  $(y = x^2)$  to  $(y = (x - 3)^2 + 2)$ ?  
Select all that apply.**

undefined. A) Shift right by 3 units ✓

undefined. B) Shift left by 3 units

undefined. C) Shift up by 2 units ✓

undefined. D) Shift down by 2 units

The transformations involve shifting the graph right and up.

**Create a real-world problem that can be solved using a system of linear equations. Provide the solution to your problem.**

**The problem should involve two variables and a system of equations.**

**Design a quadratic equation that has roots at  $(x = 1)$  and  $(x = -3)$ . Write the equation in standard form.**

1. Factored form

**$(x - 1)(x + 3)$**

2. Standard form

$$x^2 + 2x - 3$$

The equation can be written as  $(y = (x - 1)(x + 3))$ .