Factoring Quadratics Worksheet

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Part 1: Building a Foundation

What is the standard form of a quadratic equation?

Hint: Recall the general format of a quadratic equation.

- ◯ A) $ax^2 + bx + c = 0$
- ◯ A) $ax + b = 0$
- ◯ A) $ax^2 + bx = 0$
- ◯ A) $ax^2 + c = 0$

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Which of the following are components of a quadratic equation?

Hint: Think about the terms that make up a quadratic equation.

- ☐ A) Linear term

- [ ] A) Constant term
- [ ] A) Cubic term
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Explain the purpose of factoring a quadratic equation.

Hint: Consider why we would want to rewrite the equation in a different form.

Explain the purpose of factoring a quadratic equation.

Hint: Consider why we factor equations in mathematics.

Explain the purpose of factoring a quadratic equation.

Hint: Think about how factoring helps in solving equations.

Part 2: Understanding and Interpretation

Which method would you use to factor the expression $x^2 - 9$?

Hint: Consider the form of the expression and known factoring techniques.

- ◯ A) Common Factoring
- ◯ A) Factoring by Group
- ◯ A) Difference of Squares
- ◯ A) Quadratic Formula

Which method would you use to factor the expression $x^2 - 9$?

Hint: Consider the form of the expression.

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- ◯ A) Factoring by Group
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- ◯ A) Quadratic Formula

Which method would you use to factor the expression $x^2 - 9$?

Hint: Consider the special factoring techniques.

- ◯ A) Common Factoring
- ◯ A) Factoring by Group
- ◯ A) Difference of Squares
- ◯ A) Quadratic Formula

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

Hint: Identify expressions that fit the difference of squares pattern.

- ☐ A) $x^2 - 16$
- ☐ A) $x^2 + 4x + 4$
- ☐ A) $x^2 - 4x + 4$
- ☐ A) $x^2 - 25$

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

Hint: Look for expressions that fit the difference of squares pattern.

- ☐ A) $x^2 - 16$
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Describe how the zero product property is used to solve a factored quadratic equation.

Hint: Think about what happens when you set each factor to zero.

Describe how the zero product property is used to solve a factored quadratic equation.

Hint: Think about the implications of setting factors to zero.

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Part 3: Application and Analysis

What are the solutions to the equation (x - 3)(x + 5) = 0?

Hint: Use the zero product property to find the solutions.

- ◯ A) x = 3, x = -5
- ◯ A) x = -3, x = 5
- ◯ A) x = 3, x = 5

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What are the solutions to the equation (x - 3)(x + 5) = 0?

Hint: Use the zero product property to find the solutions.

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Given the quadratic equation $x^2 + 6x + 9 = 0$, which of the following are correct factorizations?

Hint: Look for factorizations that yield the original equation.

☐ A) (x + 3)(x + 3)
☐ A) (x + 9)(x - 1)
☐ A) $(x + 3)^2$
☐ A) (x + 6)(x + 1)

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Apply the factoring method to solve the quadratic equation $2x^2 + 8x = 0$. Show your work.

Hint: Factor out the common term first.

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If a quadratic equation is factored as (x + 2)(x - 7) = 0, what is the relationship between the factors and the roots of the equation?

Hint: Consider what setting each factor to zero reveals.

◯ A) The factors are the roots.

- ◯ A) The roots are the opposite of the factors.
- ◯ A) The roots are the solutions to the factors set to zero.
- ◯ A) The factors and roots are unrelated.

Part 4: Evaluation and Creation

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- ◯ A) The factors and roots are unrelated.

Which of the following is the most efficient method to factor the equation $x^2 - 49$?

Hint: Identify the special factoring technique applicable here.

- ◯ A) Common Factoring
- ◯ A) Factoring by Group
- ◯ A) Difference of Squares
- ◯ A) Completing the Square

Which of the following is the most efficient method to factor the equation $x^2 - 49$?

Hint: Identify the method that applies to this specific expression.

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Evaluate the following statements about the quadratic equation $3x^2 - 12x + 12 = 0$. Which are true?

Hint: Consider the properties of the quadratic equation.

☐ A) It can be factored by taking out a common factor first.
☐ A) It is a perfect square trinomial.
☐ A) The roots are real and equal.
☐ A) The equation can be solved using the quadratic formula.

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☐ A) It is a perfect square trinomial.
☐ A) The roots are real and equal.
☐ A) The equation can be solved using the quadratic formula.

Create a real-world problem that can be modeled by the quadratic equation $x^2 - 5x + 6 = 0$. Explain how you would solve it using factoring.

Hint: Think about a scenario that fits the equation.

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Create a real-world problem that can be modeled by the quadratic equation $x^2 - 5x + 6 = 0$. Explain how you would solve it using factoring.

Hint: Think of a scenario that fits the equation.