

Factoring Worksheet

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Part 1: Building a Foundation

What is the primary purpose of factoring in algebra?

Hint: Think about the main goal of factoring.

- To simplify expressions
- To multiply expressions
- To divide expressions
- To add expressions

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Which of the following are types of factoring methods? (Select all that apply)

Hint: Consider the different techniques used in factoring.

- Greatest Common Factor (GCF)
- Polynomial Division
- Factoring by Group
- Completing the Square

Which of the following are types of factoring methods? (Select all that apply)

Hint: Consider the various methods used in factoring.

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Explain the difference between a monomial and a binomial.

Hint: Think about the number of terms in each expression.

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List two special factoring formulas.

Hint: Consider common identities used in factoring.

1. Difference of squares

2. Perfect square trinomial

Part 2: comprehension and Application

When factoring the expression $x^2 - 9$, which steps are involved? (Select all that apply)

Hint: Think about the methods used to factor this expression.

- Identify it as a difference of squares
- Use the quadratic formula
- Write it as $(x + 3)(x - 3)$
- Combine like terms

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- Use the quadratic formula
- Write it as $(x + 3)(x - 3)$
- Combine like terms

Factor the trinomial $x^2 + 5x + 6$ and verify your result by expanding the factors.

Hint: Think about how to break down the trinomial into two binomials.

Factor the trinomial $x^2 + 5x + 6$ and verify your result by expanding the factors.

Hint: Consider the factors of the constant term.

What is the greatest common factor of the terms in the expression $6x^3 + 9x^2$?

Hint: Consider the coefficients and the variable parts of the terms.

- 3x
- $6x^2$
- $3x^2$
- 9x

What is the greatest common factor of the terms in the expression $6x^3 + 9x^2$?

Hint: Look for the highest factor common to both terms.

- 3x
- $6x^2$
- $3x^2$
- 9x

Part 3: Analysis, Evaluation, and Creation

Which expression represents the factored form of $4x^2 - 25$?

Hint: Look for patterns that match factoring techniques.

- $(2x + 5)(2x - 5)$
- $(4x + 5)(x - 5)$
- $(2x + 5)^2$
- $(4x - 5)^2$

Which expression represents the factored form of $4x^2 - 25$?

Hint: Consider the difference of squares.

- $(2x + 5)(2x - 5)$
- $(4x + 5)(x - 5)$
- $(2x + 5)^2$
- $(4x - 5)^2$

Analyze the expression $x^3 - 8$. Which of the following are true? (Select all that apply)

Hint: Consider the properties of cubes in factoring.

- It is a difference of cubes
- It can be factored as $(x - 2)(x^2 + 2x + 4)$
- It is a perfect square trinomial
- It cannot be factored further

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Hint: Think about the properties of cubes.

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Create a real-world scenario where factoring is used to solve a problem, and explain the solution process.

Hint: Think about situations where you might need to simplify or solve equations.

Create a real-world scenario where factoring is used to solve a problem, and explain the solution process.

Hint: Think about practical applications of factoring.

Propose two different expressions that can be factored using the difference of squares method.

Hint: Consider expressions that fit the form $a^2 - b^2$.

1. $x^2 - 16$

2. $9y^2 - 25$