

Worksheet On Factoring By Grouping

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Part 1: Building a Foundation

What is the primary purpose of factoring by grouping?

Hint: Think about the main goal of this factoring method.

- To solve quadratic equations
- To simplify polynomials with four or more terms
- To find the roots of a polynomial
- To multiply polynomials

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Hint: Consider the main goal of this method.

- To solve quadratic equations
- To simplify polynomials with four or more terms
- To find the roots of a polynomial
- To multiply polynomials

Which of the following are steps involved in factoring by grouping?

Hint: Consider the process of grouping and factoring.

- Group terms with common factors
- Factor out the greatest common factor from each group
- Multiply the groups
- Factor out the common binomial factor

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Explain in your own words what factoring by grouping involves and why it is useful in algebra.

Hint: Think about the steps and the benefits of this method.

Explain in your own words what factoring by grouping involves and why it is useful in algebra.

Hint: Consider the benefits of simplifying expressions.

List the key steps in the process of factoring by grouping.

Hint: Consider the sequence of actions taken during the process.

1. Step 1

2. Step 2

3. Step 3

Part 2: Comprehension and Application

When factoring the polynomial $3x + 3y + 2x + 2y$ by grouping, what is the common binomial factor?

Hint: Look for the terms that can be grouped together.

- $x + y$
- $3 + 2$
- $5x + 5y$
- $3x + 2y$

When factoring the polynomial $3x + 3y + 2x + 2y$ by grouping, what is the common binomial factor?

Hint: Look for common terms in the grouped pairs.

- $x + y$
- $3 + 2$
- $5x + 5y$
- $3x + 2y$

Which of the following expressions can be factored by grouping?

Hint: Identify expressions that have four or more terms.

- $x^2 + 2x + 3$
- $ab + ac + bd + cd$
- $x^3 + 3x^2 + 3x + 1$
- $a^2 + 2ab + b^2$

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Apply the method of factoring by grouping to the polynomial $8x^3 + 4x^2 + 2x + 1$ and show your work.

Hint: Break down the polynomial into groups and factor.

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Hint: Break down the polynomial into manageable groups.

Part 3: Analysis, Evaluation, and Creation

In the expression $5x^2 + 10x + 3x + 6$, what is the greatest common factor for the first group ($5x^2 + 10x$)?

Hint: Identify the largest factor that can be factored out.

- 5
- x
- 5x
- 10

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- x
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Evaluate the following polynomials and determine which ones can be factored by grouping:

Hint: Look for expressions with four or more terms.

- $x^2 + 4x + 4$
- $6x^2 + 9x + 2x + 3$
- $5x^2 + 10x + 5$
- $3x^2 + 6x + 3$

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- $6x^2 + 9x + 2x + 3$
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Create your own polynomial that can be factored by grouping, and demonstrate the factoring process.

Hint: Think of a polynomial with four or more terms.

Create your own polynomial that can be factored by grouping, and demonstrate the factoring process.

Hint: Think of a polynomial with four or more terms.

Given the polynomial $4x^2 + 12x + 3x + 9$, synthesize the steps to factor it by grouping and provide the final factored form.

Hint: Break down the polynomial into groups and factor out common factors.

1. Step 1

2. Step 2

3. Step 3