

SKILL #14

CODE: FP.1

Greatest Common Factor (GCF)



Core Concept

The Greatest Common Factor (GCF) is the largest expression that divides evenly into all terms of a polynomial. Finding the GCF is the first step in factoring any polynomial expression.

Examples

- For 12 and 18, the GCF is 6.
- For $4x$ and $6x^2$, the GCF is $2x$.

GULDEN RULE

1. Find the GCF of all numerical coefficients
2. Find the GCF of all variable parts (use the lowest power of each variable)
3. Multiply the results from steps 1 and 2

Why is it Important?

The GCF helps with:

- Fraction simplification $\rightarrow \frac{18}{21} = \frac{6}{7}$
- Simplifies expressions
- Solving equations

Steps to Find the GCF of Numbers

1. List the factors:

Example: For 12, factors are 1, 2, 3, 4, 6, 12.

For 18, factors are 1, 2, 3, 6, 9, 18.

2. Find common factors:

Example: Common factors of 12 and 18 are 1, 2, 3, 6.

3. Choose the largest:

Example: The GCF of 12 and 18 is 6.

Steps to Find the GCF of Terms

1. Break down each term: coefficients and variables.

Example: For $6x^2$ and $9x$, coefficients are 6 and 9, variables are x^2 and x .

2. Find GCF of coefficients: Use the steps for numbers.

Example: GCF of 6 and 9 is 3.

3. Find GCF of variables: Take the variable with the smallest power.

Example: For x^2 and x , the GCF is x (smallest power).

4. Combine: Multiply the GCF of coefficients and variables.

Example: GCF of $6x^2$ and $9x$ is $3x$.

⚠ Common Mistakes to Avoid

✗ Forgetting to factor the variable part.

✗ Forgetting the constant 1. Example $\rightarrow 4x^3 + 2x^2$

wrong: $2x^2(2x)$

correct: $2x^2(2x + 1)$

✗ Not factoring the GCF completely. Example $\rightarrow 12 + 6x$

wrong: $6(2 + 6x)$

MORE EXAMPLES

🔗 Additional Resources

