

## SKILL #09

CODE: ALG.2

# Simplifying Expressions



## Core Concept

Simplifying algebraic expressions means making them shorter, cleaner, and easier to understand — without changing their value.

To simplify, you usually follow these three key steps:

1. Evaluate any values (if given)
2. Distribute numbers across parentheses
3. Combine like terms

## Why We Need It:

Simplifying expressions makes it easier to:

- Solve equations
- Build real-world models
- Understand how variables behave

## Evaluating Expressions

Substitute values into variables, then follow the order of operations.

Examples:

- $3x - 2$  when  $x = -1$   
 $3x - 2$   
 $= 3(-1) - 2$   
 $= -3 - 2$   
 $= -5$

## Distributive Property

Multiply a number outside parentheses by everything inside

Examples:

- $5(x + 6) = 5x + 30$
- $-(x - y) = -x + y$
- $8\left(\frac{x}{2} + \frac{3}{4}\right) = \frac{8x}{2} + \frac{24}{4} = 4x + 6$

## Combining Like Terms

Group and simplify terms that have the same variable

Examples:

- $4x - 2y + 5x = 9x - 2y$
- $-1.5x + 2.2 - 5.2x - 1.6 = -6.7x + 0.6$   
Add  $-1.5x$  and  $-5.2x$  (same sign)  
Subtract  $2.2$  and  $-1.6$  (different signs)

## ⚠ Common Mistakes to Avoid

✗ Forgetting to distribute negative signs.  
 $-(x - 2) \neq -x - 2$  it's  $-x + 2$

✗ Trying to combine unlike terms:  
 $3x + 4y$  can't be combined! they are not like terms

✗ Ignoring parentheses or the order of operations



## Which One Doesn't Belong?

Simplify the following:

- 1)  $5 + 3x + 2$
- 2)  $3(x + 2) + 2$
- 3)  $7x - 2(2x - 3) + 1$
- 4)  $8\left(\frac{3}{2}x + 2\right) - 3(3x + 3)$



## Additional Resources

