Accuplacer Study Modules

TOPIC: **Simplifying Algebraic Expressions**

Khan Academy Link: https://www.khanacademy.org/math/algebra-basics/core-algebra-expressions/core-algebra-manipulating-expressions/v/combining-like-terms

Sample Problem:

Simplify the expression $4(x+3)^2 - 5x - 7$.

When simplifying expressions, the basic idea is to follow order of operations (use PEMDAS)

Parentheses
Exponents
Multiply or Divide from left to right (**distribution** is a form of multiplication)
Add and Subtract from left to right (**combining like terms** is a form of addition and subtraction)

The problem is that since there is a variable (or more than one variable), we can't always do all the math –

Parentheses – the only expression inside parentheses is $(x+3)$. Since we don't know the value of x, we can't do the parentheses in that way so we move to the next step.

Exponents – we can complete this step, but since we have a binomial being squared, we must remember to square the entire binomial. Everything else in the expression stays exactly as is until this step is complete.

$4\big((x+3)(x+3)\big) - 5x - 7$ **Note:** you can use FOIL to multiply the binomials
$4(x^2 + 3x + 3x + 9) - 5x - 7$
$4(x^2 + 6x + 9) - 5x - 7$ **Note:** you still need the parentheses because of the 4

Multiply or divide – The 4 outside of parentheses indicates multiplication. Since we can't do the parentheses in this problem, we use **distribution** to complete the multiplication step. Everything else in the expression stays exactly as is until this step is complete.

$4(x^2 + 6x + 9) - 5x - 7$ **Note:** the 4 gets multiplied by each term in parentheses
$4x^2 + 24x + 36 - 5x - 7$

Add and subtract – We will be adding and subtracting our like terms only. This is usually called "Combining like terms".

$4x^2 + 24x + 36 - 5x - 7$
$4x^2 + 19x + 29$

Record your answer: $4x^2 + 19x + 29$

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Instructions: simplify each expression

1. $5x + 9 - 4y + 3x - 10$	2. $4(x - 3) + 7(x + 5)$
3. $3(x - 2)^2 - 4(x + 3)$	4. $10x - 5y + 3(x + 2y + 7)$