8.4 Special Products

Objective: I can use patterns to simplify polynomials.

Simplify $(3x + 5)^2$

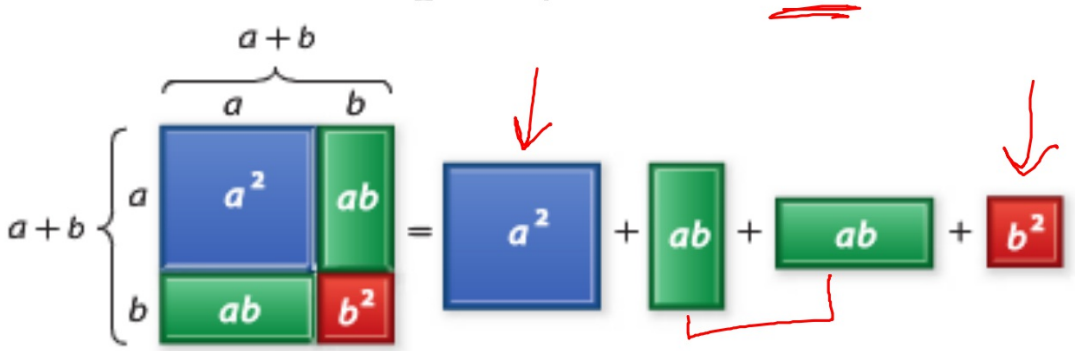
expand

$(3x + 5)(3x + 5)$

$9x^2 + 15x + 15x + 25$

$9x^2 + 30x + 25$

Finding a Square of a Sum



$(a + b)^2 = a^2 + 2ab + b^2$

Example: Simpify $(3x + 5)^2$

$(3x)^2 + 2 \cdot 3x \cdot 5 + 5^2$

$9x^2 + 30x + 25$

Finding the Square of a Difference

$$(a - b)^2 = a^2 - 2ab + b^2$$

Example: Simplify $(2x - 5y)^2$

a b

$5y)(2x - 5y)$

$(2x)^2 - 2 \cdot 2x \cdot -5y + (-5$

$4x^2 + 20xy + 25y^2$

3. **GARDENING** Alano has a garden that is g feet long and g feet wide. He wants to add 3 feet to the length and the width.

A. Show how the new area of the garden can be modeled by the square of a binomial.

B. Find the square of this binomial.

$(a+b)^2$

$A = s^2$

$A = b \cdot h$

Evaluate

$(g+3)^2$

$g^2 + 2 \cdot g \cdot 3 + 3^2$

$g^2 + 6g + 9$

The area would be $g^2 + 6g + 9$ units^2

a) $A = s^2$

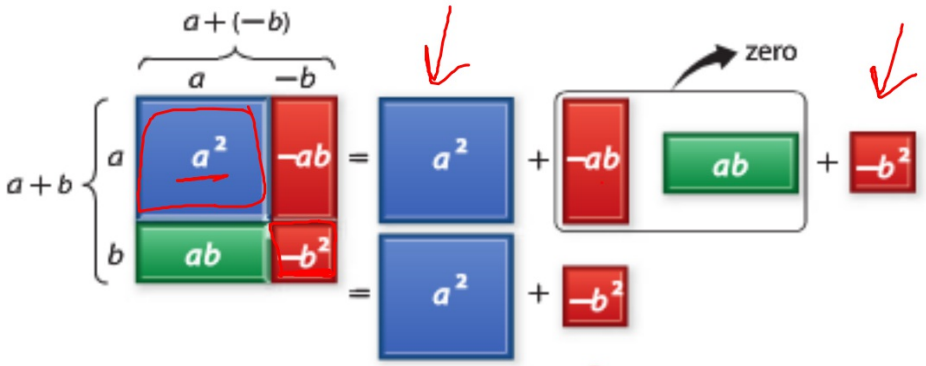
$A = (g+3)^2$

$A =$

$A =$

Answer $(g+3)^2$

Finding the Product of a Sum and Difference



$(a - b)(a + b) = a^2 - b^2$

Example: Simplify $(2x^2 + 3)(2x^2 - 3)$

$a + b \quad a - b$

$(2x^2)^2 - (3)^2$

$4x^4 - 9$