Algebra 1 8.4

Find squares of sums and differences

Find the product of a sum and a difference

sum

difference

product

EWE

difference of squares

X-factor

1B. $(3x + 4y)^2$

$= 9x^2 + 24xy + 16y^2$

$3x \cdot 3x \quad 2(3x)(4y) \quad 4y \cdot 4y$

$9x^2 + 24xy + 16y^2$

$(\ )(\ )$

$3x + 4y$

$3x + 4y$

$12xy + 16y^2$

$9x^2 + 12xy$

$9x^2 + 24xy + 16y^2$

$2 \cdot 2x \cdot -5y$

Example 2 Square of a Difference

Find $(2x - 5y)^2$.

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

$2x - 5y$

$2x - 5y$

$-10xy + 25y^2$

$4x^2 - 10xy$

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

$2 \cdot 6p \cdot -1$

GuidedPractice

Find each product.

2A. $(6p - 1)^2$

$-2b \cdot -2b$

$2 \cdot a \cdot -2b$

2B $(a - 2b)^2$

$36p^2 - 12p + 1$

$a^2 - 4ab + 4b^2$

Real-World Example 3 Square of a Difference

PHYSICAL SCIENCE Each edge of a cube of aluminum is 4 centimeters less than each edge of a cube of copper. Write an equation to model the surface area of the aluminum cube.

GuidedPractice

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.

$(x+5)^2 = (x+5)(x+5)$

Difference of squares: EWE look for a pattern

* (x + 5)(x - 5) $= x^2 - 25$

(x + 3)(x - 3) $= x^2 - 9$

(x + 9)(x - 9) $= x^2 - 81$

$x+5$

$x-5$

$x^2 \overset{-5x}{\underset{5x}{\bigcirc}} -25$

Example 4 Product of a Sum and a Difference

Find $(2x^2 + 3)(2x^2 - 3)$.

$$\begin{array}{r} 2x^2+3 \\ \cdot\, 2x^2-3 \\ \hline 4x^4 \quad -9 \end{array}$$

$$(2x+3)^2$$

GuidedPractice

Find each product.

4A. $(3n + 2)(3n - 2)$

$9n^2 - 4$

$25x^2 - 9$

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

4B. $(4c - 7d)(4c + 7d)$

$16c^2 - 49d^2$

$(4c+7d)^2$

$16c^2 + 56cd + 49d^2$