Algebra 1 8.4

Find squares of sums and differences

Find the product of a sum and a difference

sum

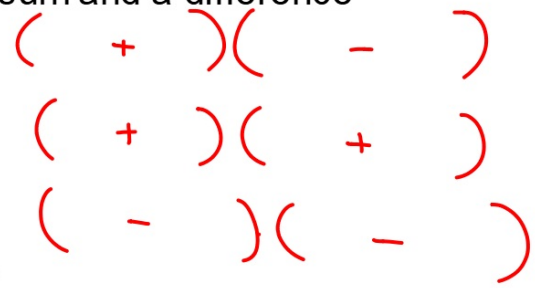
difference

product

EWE

difference of squares

X-factor



What does it mean to square something?

ewe $17^2 = 17 \cdot 17 = 289$

$100 + 49$

Is $17 = 10 + 7$?

Is $17^2 = (10+7)^2$?
(what is the correct answer?)

Is that the same as $10^2 + 7^2$?

$x+3$
$x+3$
$3x\ \ 9$
$x^2\ 3x$

EWE: look for patterns

$(x+5)^2 = (x+5)(x+5) = x^2+10x+25$

$(x+3)^2 = (x+3)(x+3) = x^2+6x+9$

$(x-10)^2 = (x-10)(x-10) = x^2-20x+100$

$(x+8)^2 = (x+8)(x+8) = x^2+16x+64$

$(x-7)^3 = (x^2-14x+49)(x-7)$

EWE always!

Example 1 Square of a Sum

Find $(3x + 5)^2$. $(3x+5)(3x+5)$

$3x+5$

$3x+5$

$15x + 25$

$9x^2 + 15x$

$9x^2 + 30x + 25$

$(2x+6)^2$

$4x^2 + 24x + 36$

$(5x-2)^2$

$25x^2 - 20x + 4$

$(3x+6)^2 = 9x^2 + 36x + 36$

GuidedPractice

Find each product.

1A. $(8c + 3d)^2$ $64c^2 + 48cd + 9d^2$

$(5n + 7x)^2$

$25n^2 + 70nx + 49x^2$

$(10x - 3a)^2 = 100x^2 - 60xa + 9a^2$

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

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

Example 2 Square of a Difference

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

-10

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

GuidedPractice

Find each product.

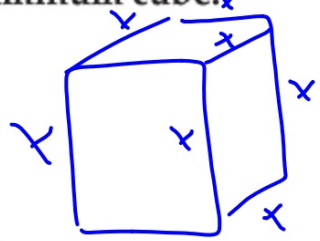
2A. $(6p - 1)^2$

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

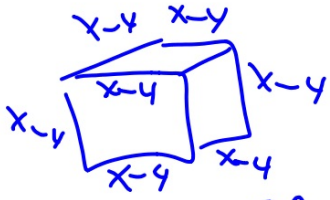
$x^2+10x+25 = (x+5)^2$

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.



$6x^2$



$6(x-4)^2$

$6(x^2-8x+16)$

$6x^2-48x+96$

GuidedPractice

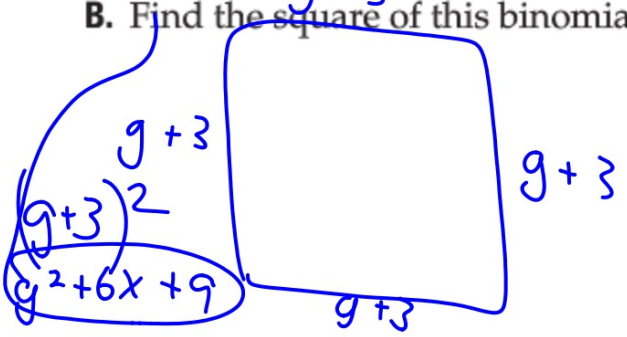
3. GARDENING Alano has a garden that is g feet long and g feet wide. He wants to add 3 feet to the length and the width.

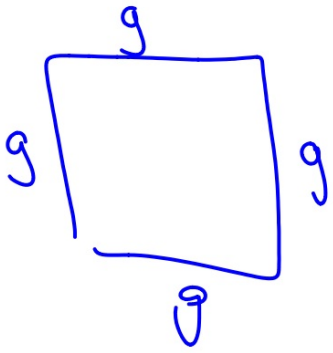
A. Show how the new area of the garden can be modeled by the square of a binomial.

$(g+3)^2$

B. Find the square of this binomial.

$g+3$





Difference of squares: EWE look for a pattern

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

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

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

$x + 5$

$x - 5$

$x^2 + 5x - 5x - 25$

Example 4 Product of a Sum and a Difference

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

GuidedPractice

Find each product.

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

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