

Algebra Section 9-3 Notes

Multiplying Binomials

Name: _____
Date: _____ Block: _____

Alg Ch09 Notes 9-3 20160406.docx_

We use the **Distributive Property** to find the product of two binomials:

$$(x+2)(x+3) = x \cdot x + x \cdot 3 + 2 \cdot x + 2 \cdot 3$$

$$\text{Ex: } = x^2 + 3x + 2x + 6$$

$$= x^2 + 5x + 6$$

You can use the so-called FOIL method to remind yourself how to multiply two binomials:

- F – first times first
- O – outer times outer
- I – inner times inner
- L – last times last

Example One: Using the Distributive Property

Simplify $(2x+3)(x+4)$.

$$(2x+3)(x+4) = 2x(x+4) + 3(x+4)$$

$$= 2x^2 + 8x + 3x + 12$$

$$= 2x^2 + 11x + 12$$

Simplify each product.

a. $(6h-7)(2h+3)$

b. $(5m+2)(m-1)$

c. $(9a-8)(7a+4)$

Example Two: Multiplying Using FOIL

Simplify $(3x-5)(2x+7)$.

$$(3x-5)(2x+7) = (3x)(2x) + (3x)(7) - (5)(2x) - (5)(7)$$

$$= 6x^2 + 21x - 10x - 35$$

$$= 6x^2 + 11x - 35$$

Simplify each product using FOIL.

a. $(3x+4)(2x+5)$

b. $(3x-4)(2x+5)$

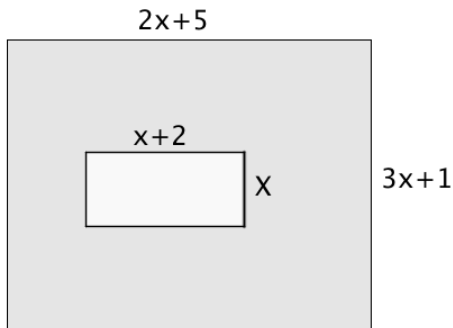
c. $(3x+4)(2x-5)$

d. $(3x-5)(2x-7)$

You can use FOIL to find the area of some geometric figures.

Example Three: Applying Multiplication of Polynomials

Find the area of the shaded region. Simplify your answer.



$$\text{Area of outer rectangle} = (3x+1)(2x+5)$$

$$\text{Area of hole} = x(x+2)$$

$$\begin{aligned}\text{Area of shaded region} &= \text{Area of outer rectangle} - \text{Area of hole} \\ &= (3x+1)(2x+5) - x(x+2) \\ &= 6x^2 + 15x + 2x + 5 - x^2 - 2x \\ &= 6x^2 - x^2 + 15x + 2x - 2x + 5 \\ &= 5x^2 + 15x + 5\end{aligned}$$

Homework: Pages 469–470, #1-37, odds