

Multiplying a Binomial X Binomial

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Pattern:

$$(a+b)(c+d) = a \cdot c + a \cdot d + b \cdot c + b \cdot d$$

"Double distributive Law"

* we can use FOIL to help remember:

F irst

O utside

I nside

L ast

Ex. Expand using FOIL

① $(x+5)(x+4)$

$$x \cdot x + x \cdot 4 + 5 \cdot x + 5 \cdot 4$$

$$x^2 + \underline{4x} + \underline{5x} + 20$$

$$x^2 + 9x + 20$$

② $(2a-3)(4a+5)$

$$2a \cdot 4a + 2a \cdot 5 + -3 \cdot 4a + -3 \cdot 5$$

$$8a^2 + \underline{10a} - \underline{12a} - 15$$

$$8a^2 - 2a - 15$$

③ $(6-x^2)(4-x^2)$

$$6 \cdot 4 + 6(-x^2) + (-x^2)4 + (-x^2)(-x^2)$$

$$24 + \underbrace{-6x^2} + \underbrace{-4x^2} + x^4$$

$$24 - 10x^2 + x^4$$

$$x^4 - 10x^2 + 24 \leftarrow \text{order matters}$$