Lesson ES - 3

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Objective: Multiplying Polynomials

Homework ES-3 – NYA p.507 #8 – 13, 22 – 24, 36, 37, 56 (any method)
Special Cases NYA p.515 #1, 5, 16, 20, 28, 47, 58

Do Now: 1. $(3 + 5x) – (7x^2 + 3x)$ 2. $(–5 + x) + (2x) + (x^2 – 10x + 1)$

Exam Prep: Which binomial has no GCF?

A) $16x – 24$ B) $–13x + 39y^2$ C) $x^4 + 2x^7$ D) $11x^2 + 23$

EVERYTHING IN HERE IS THE DISTRIBUTIVE PROPERTY!

$2(–4x + 3) = –8x + 6$

Refresh: Distributive Property (monomial x polynomial)

1. $2x(3x^2 – x)$	2. $4(2y^3 + 5x – 1)$	3. $–x(2 + 3x)$

Multiplying Polynomials: Binomial x Binomial (Distributive Property with FOIL)

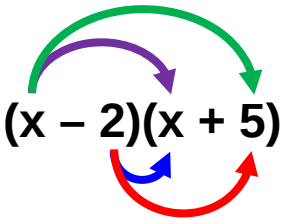
$(x – 2)(x + 5) = x^2 + 3x – 10$

FOIL is an acronym for **F**irsts **O**uters **I**nners **L**asts

Firsts $(x – 2)(x + 5)$	**O**uters $(x – 2)(x + 5)$
Inners $(x – 2)(x + 5)$	**L**asts $(x – 2)(x + 5)$
Raw Result: $x^2 + 5x – 2x – 10$	Simplified: $x^2 + 3x – 10$

Helps with the

DISTRIBUTIVE PROPERTY

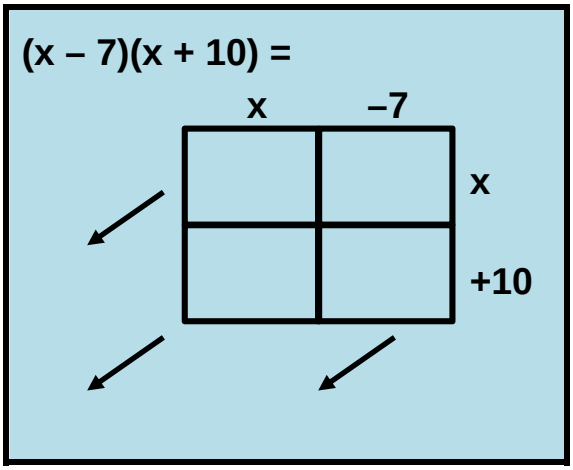


Practice

1. $(x + 2)(x + 2) =$	3. $(x + 4)(x – 6) =$
2. $(x – 5)(x – 5) =$	4. $(x – 7)(x + 10) =$
5. $(2x^3 + x)(3x + 2) =$	6. $(x^2 + 4)(9 – x^2) =$

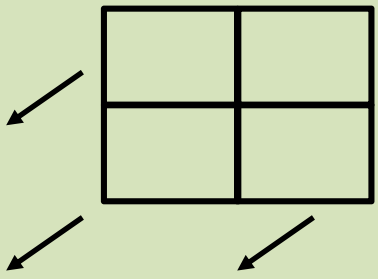
Geometric Method – Visual Guide

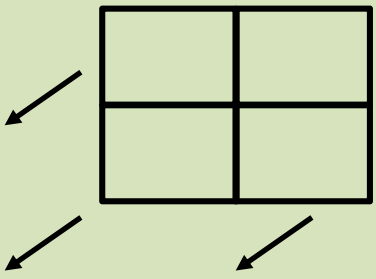
$(x – 7)(x + 10) =$



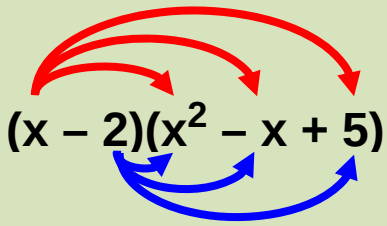
Practice

$(2x + 3)(3x – 1) =$	$(–4x – 5)(x + 6) =$





Extend Multiplying Polynomials: Use Distributive (binomial x trinomial)



$= x(x^2 - x + 5) - 2(x^2 - x + 5)$ ← Don't Show

$= x^3 - x^2 + 5x - 2x^2 + 2x - 10$

$= x^3 - 3x^2 + 7x - 10$

Practice

1. $(x + 5)(7x^2 - 4x + 2)$

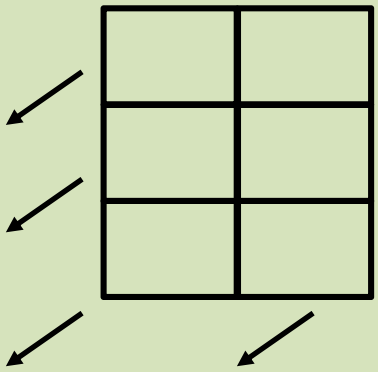
2. $(5x - 1)(x^2 + 2x - 1)$

3. $(-2x + 1)(x^2 + x + 15)$

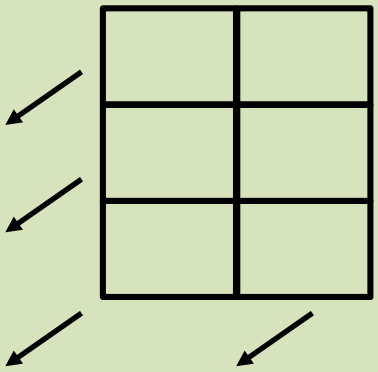
4. $(x + 2)(3x^2 + 2x + 10)$

Geometric Method Practice

$(x + 1)(x^2 + 6x + 2) =$



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



Extension: Trinomial x Trinomial (use any method)

1. $(2x^2 + 3x - 1)(x^2 - 4x + 2)$	2. $(x^2 + x + 6)(x^2 - 2x + 3)$

Special Cases of FOIL: Not Very Important

Square of a Binomial	$(a + b)^2 = a^2 + 2ab + b^2$	$(x + 7)^2 =$
	$(a - b)^2 = a^2 - 2ab + b^2$	$(2y - 1)^2 =$
Difference of Squares	$(a + b)(a - b) = a^2 - b^2$	$(3x + 5)(3x - 5) =$

Practice: More FOIL with some special cases

1. $(x + 9)^2 =$	5. $(d - 4)(d + 4) =$
2. $(k + 11)(k - 4) =$	6. $(5w - 1)(w - 1) =$
3. $(2a - 1)^2 =$	7. $(2x - 5)(4x - 10) =$
4. $(y + 2)(y + 30) =$	8. $(6a - 3)(6a + 3) =$

Extra FOIL Practice

1. (x + 1)(x + 5) =	**4. (x + 4)(x – 3) =**
2. (x – 2)(x – 10) =	**5. (x – 6)(x + 6) =**
3. (x + 1)(x – 6) =	**6. (x + 5)(x + 0) =**