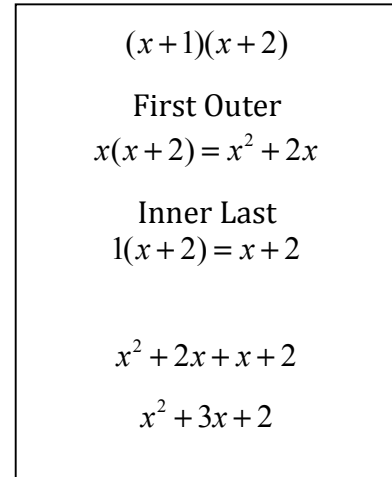
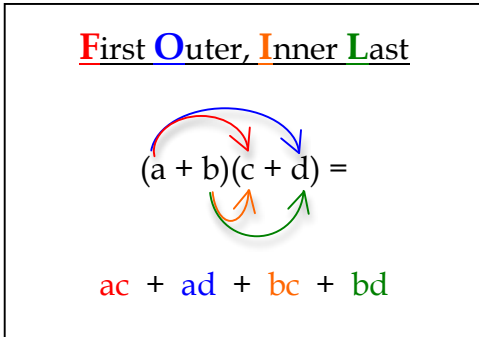


When you multiply polynomials in **factored** form, the product is a polynomial in **standard** form.

Method 1: FOIL



Distribute, Distribute, Distribute!

× Multiply the coefficients

+ Add the exponents of powers with the same base

Combine Like Terms!

Let's Practice

1. $-5x(6x + 1)$

$-30x^2 - 5x$

2. $(6s + 4)(-2s - 5)$

$-12s^2 - 38s - 20$

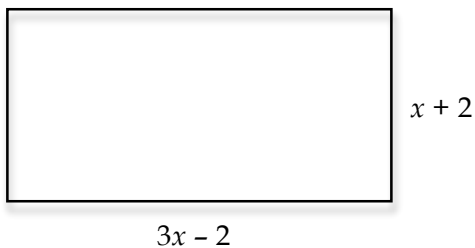
3. $(-9r + 3)(3r + 4)$

$-27r^2 - 27r + 12$

4. $(10n - 6)(-4n^2 + n - 8)$

$-40n^3 + 34n^2 - 86n + 48$

5. Find the area of the rectangle.



$3x^2 + 4x - 4$

Method 2: Area Models

Another way to multiply polynomials is to use an area model.

Think Punnett squares!

Example

$$(x+1)(x+2)$$

•	x	$+2$
x	x^2	$+2x$
$+1$	$+1x$	$+2$

$$x^2 + 2x + x + 2$$

$$x^2 + 3x + 2$$

- ♦ Write each term of one polynomial in a separate box in column 1.
- ♦ Write each term of the other polynomial in a separate box in row 1.
- ♦ Multiply each term in the 1st row by each term in the 1st column and write each product in the other boxes.
- ♦ Combine like terms.

of rows = # of terms in the 1st polynomial
of cols = # of terms in the 2nd polynomial

Let's Practice

6. $3x(4x+1)$

•	$4x$	$+1$
$3x$	$12x^2$	$+3x$

$$12x^2 + 3x$$

7. $(x-4)(2x+3)$

•	$2x$	$+3$
x	$2x^2$	$+3x$
-4	$-8x$	-12

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

$$2x^2 - 5x - 12$$

8. $5x^3(4x^2+3x+7)$

•	$4x^2$	$+3x$	7
$5x^3$	$20x^5$	$+15x^4$	$+35x^3$

$$20x^5 + 15x^4 + 35x^3$$

9. $(x+5)(2x^2-3x-4)$

•	$2x^2$	$-3x$	-4
x	$2x^3$	$-3x^2$	$-4x$
$+5$	$+10x^2$	$-15x$	-20

$$2x^3 - 3x^2 - 4x + 10x^2 - 15x - 20$$

$$2x^3 - 3x^2 + 10x^2 - 4x - 15x - 20$$

$$2x^3 + 7x^2 - 19x - 20$$