Lesson 1.2 Multiplying Polynomials "FOIL"

Algebra 2

- First Outside Inside Last
- Make sure to look at the signs within the binomials, anticipate the following 2 things
  - 1. What Operation is used to (add/subtract) the "OI" middle terms
    - 2. The sign on the "L" or the last term.

1) 
$$(3x-1)(2x+5) = 6x^{2} + 15x-2x-5$$
  
F:  $6x^{2}$   
O:  $15x$   
I:  $-2x$   
L:  $-5$   
2)  $(3x+1)(2x+5) = 6x^{2} + 15x + 2x+5$   
F:  $6x^{2}$   
C:  $15x$   
O:  $15x$   
C:  $15x$   
C:  $5x$   
C:  $15x$   
C:  $5x$   
C:  $15x$   
C:

3) 
$$(3x + 1)(2x - 5) =$$
  
F:  $6x^{2}$   
 $0: -15x$   
 $1: 2x$   
 $L: -5$   
Subtract to get the "OI"  
 $L'' \text{ is Negative}$   
 $6x^{2} - 13x - 5$   
 $L: -5$ 

4) 
$$(3x-1)(2x-5) = \frac{Add}{(1-x)^2}$$
 to get the "OI"  
F:  $6x^2$   $6x^2 - 15x - 2x + 5$  "L" is positive  
o: -15x  
i: -2x  $6x^2 - 17x + 5$   
L: 5

Investigate:

Same signs within the binomials are the same: 
$$\overrightarrow{Add}$$
 to get the "OI"  
 $(x+3)(x+2)$   
 $(x-3)(x-2)$  "L" is  $\overrightarrow{POSitive}$   
Different Signs within the binomials are different:  $\overrightarrow{Subtract}$  to get the "OI"  
 $(x+3)(x-2)$  "L" is  $\overrightarrow{Negative}$ 

Practice: Find the product of these binomials WITHOUT showing work. Use our investigation to anticipate the operation to find the "OI" and the sign of the "L". But don't forget about the "F"

5) 
$$(2x-1)(3x-5)$$
 Add OI, List  
 $6x^2 - 13x + 5$ 

$$6^{10} = 6^{10} = 6^{2x+1}(3x-5)$$
 Subtract OI, L is negative  $6x^2 - 7x - 5$ 

7) 
$$(2x-1)(3x+5)$$

$$6x^2 + 7x - 5$$

8) 
$$(2x+1)(3x+5)$$

 $bx^2 + 13x + 5$