



# Multiplying Binomials by Binomials (FOIL)

(Video Notes)

[Video Link](#)

# Multiplying Binomials by Binomials (FOIL)

Background knowledge - what you need to know before you can FOIL.

- how to multiply monomials by monomials
- how to multiply monomials by polynomials (distribution)

Expand:

$$\begin{array}{l} (x-5)(x+7) \\ \underline{x(x+7) - 5(x+7)} \\ x^2 + 7x - 5x - 35 \\ \boxed{x^2 + 2x - 35} \end{array}$$

$$\begin{array}{l} (x-5)(x+7) \\ \text{First } (x \cdot x = x^2) \\ \text{Outer } (x \cdot 7 = 7x) \\ \text{Inner } (-5 \cdot x = -5x) \\ \text{Last } (-5 \cdot 7 = -35) \end{array}$$

\* multiplication is commutative (order doesn't matter)

$$\begin{array}{l} \text{FOIL} \quad \text{LIOF} \\ \underline{x^2 + 7x - 5x - 35} \\ \boxed{x^2 + 2x - 35} \end{array}$$

Expand:

$$(2x^2 - 9)(x + 8)$$

$$2x^3 + 16x^2 - 9x - 72$$

F ✓  
O ✓  
I ✓  
L

Expand:

$$(3x - 1)^2$$

Common mistake

$$\frac{(3x-1)^2}{9x^2+1}$$

No!

$(3x-1)^2$  → mult. everything by itself.

$$(3x-1)(3x-1)$$

$$9x^2 - 3x - 3x + 1$$

$$9x^2 - 6x + 1$$

F ✓  
O ✓  
I ✓  
L ✓

**IMPORTANT**

You can only use FOIL if you are going to multiply a binomial by a binomial.