

**FOIL Method for Multiplying Binomials**

Example 1

Steps

$(3x - 8)(2x - 4)$

$(3x - 8)(2x - 4)$

$6x^2$

$(3x - 8)(2x - 4)$

$6x^2 - 12x$

$(3x - 8)(2x - 4)$

$6x^2 - 12x - 16x$

$(3x - 8)(2x - 4)$

$6x^2 - 12x - 16x + 32$

**$6x^2 - 28x + 32$**

$6x^2 - 28x + 32$

Example 2

Original Problem

Multiply the First terms:

$(3x)(2x) = 6x^2$

(variable X variable) = (variable)<sup>2</sup>

Multiply the Outside terms:

$(3x)(-4) = -12x$

Multiply the Inside terms

$(-8)(2x) = -16x$

Multiply the Last terms:

$(-8)(-4) = 32$

Combine like terms:

$-12x - 16x = -28x$

Solution:

$(3n + 5)(2n - 7)$   
 $6n^2 - 21n + 10n - 35$   
 $6n^2 - 11n - 35$

You Try

$(2h - 3)(4h + 1)$   
 $8h^2 + 2h - 12h - 3$   
 $8h^2 - 10h - 3$

Example 1

Steps

Example 2

$(x + 3)^2$  ← Exponent 2 means that we need to "square" this binomial or multiply it by itself.

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

$$(x+3)(x+3)$$

$$\begin{array}{l} \curvearrowright \\ (x+3)(x+3) \end{array}$$

$$x^2$$

$$\begin{array}{l} \curvearrowright \\ (x+3)(x+3) \end{array}$$

$$x^2 + 3x$$

$$\begin{array}{l} \curvearrowright \\ (x+3)(x+3) \end{array}$$

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

$$\begin{array}{l} \curvearrowright \\ (x+3)(x+3) \end{array}$$

$$x^2 + 3x + 3x + 9$$

$$x^2 + 6x + 9$$

$$x^2 + 6x + 9$$

Use FOIL to multiply the binomials.

Multiply the First terms:

$$(x)(x) = x^2$$

Multiply the Outer terms:

$$(x)(3) = 3x$$

Multiply the Inner terms:

$$(3)(x) = 3x$$

Multiply the Last terms:

$$(3)(3) = 9$$

Combine like terms.

**Solution**

$$\begin{array}{l} (2k-1)^2 \\ (2k-1)(2k-1) \\ 4k^2 - 2k - 2k + 1 \\ \boxed{-4k^2 - 4k + 1} \end{array}$$

You Try

$$\begin{array}{l} (5y+2)^2 \\ (5y+2)(5y+2) \\ 25y^2 + 10y + 10y + 4 \\ \boxed{25y^2 + 20y + 4} \end{array}$$