Multiplying Polynomials

Clear Learning Target

You will be able to multiply polynomials by monomials and other polynomials.

Example #1: Simplify.

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

$(3x)(7x^2)$ $(3x)(-x)$ $3x \cdot 4$

$21x^3$ $-3x^2 + 12x$

$$21x^3 - 3x^2 + 12x$$

You Try! Simplify.

$2d^2(3d^4 - 2d^3 - 4d + 9)$

$(2d^2) \cdot 9$

$6d^6 - 4d^5 - 8d^3 + 18d^2$

Example #2: Simplify.

$$2p(-4p^2 + 5p) - 5(2p^2 + 20)$$

$-8p^3 + 10p^2 - 10p^2 - 100$

$$\boxed{-8p^3 - 100}$$

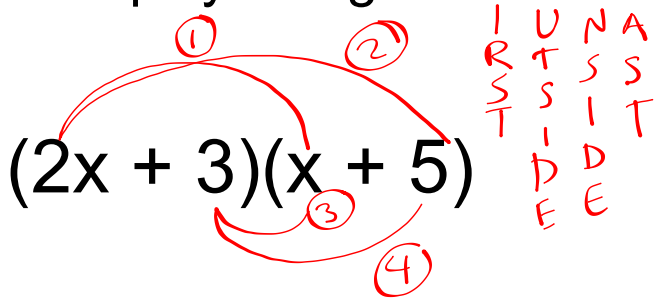
You Try! Simplify.

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

$3x^3 + 4x + 14x - 6$

$$\boxed{3x^2 + 18x - 6}$$

Example #3: Simplify using the F.O.I.L. method.



$2x^2 + 10x + 3x + 15$

$2x^2 + 13x + 15$

You Try! Simplify using the FOIL method.

$(4a - 5)(2a - 9)$

$8a^2 - 36a - 10a + 45$

$8a^2 - 46a + 45$

Example #4: Simplify.

$$(6x + 5)(2x^2 - 3x - 5)$$

$12x^3 - 18x^2 - 30x + 10x^2 - 15x - 25$

$\boxed{12x^3 - 8x^2 - 45x - 25}$

You Try! Simplify.

$$(3x - 5)(2x^2 + 7x - 8)$$

$6x^3 + 21x^2 - 24x - 10x^2 - 35x + 40$

$\boxed{6x^3 + 11x^2 - 59x + 40}$