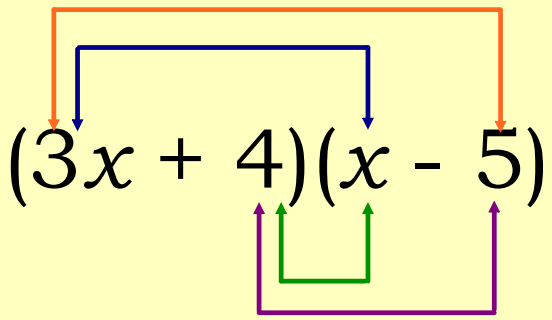
8.2 PART 2
MULTIPLYING POLYNOMIALS

Multiplying Binomials and Trinomials

To multiply a binomial by a binomial, you can use the FOIL Method.

$(3x + 4)(x - 5)$



FIRST
OUTER
INNER
LAST

$(3x)(x) + (3x)(-5) + (4)(x) + (4)(-5)$

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

$3x^2 + -11x + -20$

$3x^2 - 11x - 20$

Use the FOIL method to find the product.

1. $(4x + 1)(2x - 3)$

F O I L

$(4x)(2x) + (4x)(-3) + (1)(2x) + (1)(-3)$

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

$8x^2 - 10x - 3$

Use the FOIL method to find the product.

3. $(8x - 3)(2x + 1)$

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

$16x^2 + 8x - 6x - 3$

$16x^2 + 2x - 3$

Use the FOIL method to find the product.

2. $(x - 5)(6x - 7)$

F O I L

$(x)(6x) + (x)(-7) + (-5)(6x) + (-5)(-7)$

$6x^2 \quad -7x \quad -30x \quad +35$

$6x^2 - 37x + 35$

Use the FOIL method to find the product.

4. $(3x + 11)(4x + 7)$

$(3x)(4x) + (3x)(7) + (11)(4x) + (11)(7)$

$12x^2 \quad +21x \quad +44x \quad +77$

$12x^2 + 65x + 77$

You can also multiply
two binomials
using the
distributive property.

Recall from Chapter 2,
$3(2x - 5)$ becomes $6x - 15$.

5. $x(3x^2 + 6x - 8)$

$3x^3 + 6x^2 - 8x$

6. $-3x(2x^2 - x + 4)$

Use the distributive property to find the product.

$(x + 2)(x - 3)$

$(x + 2)(x - 3)$

$x(x - 3) + 2(x - 3)$

$x(x) + x(-3) + 2(x) + 2(-3)$

$x^2 + -3x + 2x + -6$

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

$x^2 - x - 6$

Use the distributive property to multiply.

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

$x(x + 4)$ $\quad -2(x + 4)$

$x^2 + 4x \quad -2x - 8$

$x^2 + 2x - 8$

Use the distributive property to multiply.

8. $(2x + 1)(x + 2)$

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

$2x^2 + 4x + x + 2$

$2x^2 + 5x + 2$

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

Regardless of whether you like the FOIL method or the distributive property... you MUST use the distributive property to multiply anything larger than binomials!

Use the distributive property to multiply.

9. $(x + 4)(x^2 - 5x + 7)$

$(x + 4)(x^2 - 5x + 7)$

$x(x^2 - 5x + 7) + 4(x^2 - 5x + 7)$

$x^3 - 5x^2 + 7x + 4x^2 - 20x + 28$

$x^3 - x^2 - 13x + 28$

Use the distributive property to multiply.

10. $(x - 3)(3x^2 + x - 4)$

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

$3x^3 + x^2 - 4x - 9x^2 - 3x + 12$

$3x^3 - 8x^2 - 7x + 12$