

6.4 Multiplying Binomials

$$a(x+4) = a(x) + a(4) \\ = ax + 4a$$

let $a = x + 3$

Then we have $\overbrace{(x+3)}^{\text{binomial}} \overbrace{(x+4)}^{\text{binomial}}$

$$\begin{aligned} & \textcircled{(x+3)}(x+4) \\ & (x+3)(x) + (x+3)(4) \\ & x(x+3) + 4(x+3) \\ & x(x) + x(3) + 4(x) + 4(3) \\ & x^2 + 3x + 4x + 12 \\ & x^2 + 7x + 12 \\ & * \text{ Double Distribute} \end{aligned}$$

FOIL — used to multiply two binomials

F irsts

O uters
I nners

L asts



Examples:

$$\begin{aligned} 1. & (y-2)(y+5) \\ & \text{F} + \text{O} + \text{I} + \text{L} \\ & (y)(y) + y(5) - 2(y) - 2(5) \\ & y^2 + 5y - 2y - 10 \\ & y^2 + 3y - 10 \end{aligned}$$

$$\begin{aligned} 2. & (x-8)(x+2) \\ & \text{F} + \text{O} + \text{I} + \text{L} \\ & x(x) + x(2) - 8(x) - 8(2) \\ & x^2 + 2x - 8x - 16 \\ & x^2 - 6x - 16 \end{aligned}$$

$$\begin{aligned} 3. & (3x-4)(4x+5) \\ & \text{F} + \text{O} + \text{I} + \text{L} \\ & 3x(4x) + 3x(5) - 4(4x) - 4(5) \\ & 12x^2 + 15x - 16x - 20 \\ & 12x^2 - x - 20 \end{aligned}$$

$$\begin{aligned} 4. & (2m-7)(m+3) \\ & \text{F} + \text{O} + \text{I} + \text{L} \\ & 2m(m) + 2m(3) - 7(m) - 7(3) \\ & 2m^2 + 6m - 7m - 21 \\ & 2m^2 - m - 21 \end{aligned}$$

$$5. (2n-5)(n+3)$$

$$\begin{aligned} & \text{F} + \text{O} + \text{I} + \text{L} \\ & 2n(n) + 2n(3) - 5(n) - 5(3) \\ & 2n^2 + 6n - 5n - 15 \\ & 2n^2 + n - 15 \end{aligned}$$

$$6. (c-6)(c+6)$$

$$\begin{aligned} & \text{F} + \text{O} + \text{I} + \text{L} \\ & c(c) + c(6) - 6(c) - 6(6) \\ & c^2 + 6c - 6c - 36 \\ & c^2 - 36 \end{aligned}$$

HOMEWORK

Worksheet - HW 6.4