

# 8-7 Study Guide and Intervention

## Multiplying Polynomials

**Multiply Binomials** To multiply two binomials, you can apply the Distributive Property twice. A useful way to keep track of terms in the product is to use the FOIL method as illustrated in Example 2.

**Example 1** Find  $(x + 3)(x - 4)$ .

**Horizontal Method**

$$\begin{aligned} (x + 3)(x - 4) &= x(x - 4) + 3(x - 4) \\ &= (x)(x) + x(-4) + 3(x) + 3(-4) \\ &= x^2 - 4x + 3x - 12 \\ &= x^2 - x - 12 \end{aligned}$$

**Vertical Method**

$$\begin{array}{r} x + 3 \\ (\times) \quad x - 4 \\ \hline -4x - 12 \\ x^2 + 3x \\ \hline x^2 - x - 12 \end{array}$$

The product is  $x^2 - x - 12$ .

**Example 2** Find  $(x - 2)(x + 5)$  using the FOIL method.

$$\begin{array}{cccc} (x - 2)(x + 5) & & & \\ \text{First} & \text{Outer} & \text{Inner} & \text{Last} \\ = (x)(x) + (x)(5) + (-2)(x) + (-2)(5) \\ = x^2 + 5x + (-2x) - 10 \\ = x^2 + 3x - 10 \end{array}$$

The product is  $x^2 + 3x - 10$ .

Lesson 8-7

**Exercises**

Find each product.

- |                          |                         |                        |
|--------------------------|-------------------------|------------------------|
| 1. $(x + 2)(x + 3)$      | 2. $(x - 4)(x + 1)$     | 3. $(x - 6)(x - 2)$    |
| 4. $(p - 4)(p + 2)$      | 5. $(y + 5)(y + 2)$     | 6. $(2x - 1)(x + 5)$   |
| 7. $(3n - 4)(3n - 4)$    | 8. $(8m - 2)(8m + 2)$   | 9. $(k + 4)(5k - 1)$   |
| 10. $(3x + 1)(4x + 3)$   | 11. $(x - 8)(-3x + 1)$  | 12. $(5t + 4)(2t - 6)$ |
| 13. $(5m - 3n)(4m - 2n)$ | 14. $(a - 3b)(2a - 5b)$ | 15. $(8x - 5)(8x + 5)$ |
| 16. $(2n - 4)(2n + 5)$   | 17. $(4m - 3)(5m - 5)$  | 18. $(7g - 4)(7g + 4)$ |