

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

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

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

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

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

$$= x^2 - x - 12$$

**Vertical Method**

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

$$\begin{array}{r} x^2 + 3x \\ \hline x^2 - x - 12 \end{array}$$

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

**Exercises**

Find each product.

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

$$x^2 + 5x + 6$$

$$4. (p - 4)(p + 2)$$

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

$$x^2 - 3x - 4$$

$$5. (y + 5)(y + 2)$$

$$3. (x - 6)(x - 2)$$

$$6. (2x - 1)(x + 5)$$

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

$$(x - 2)(x + 5)$$

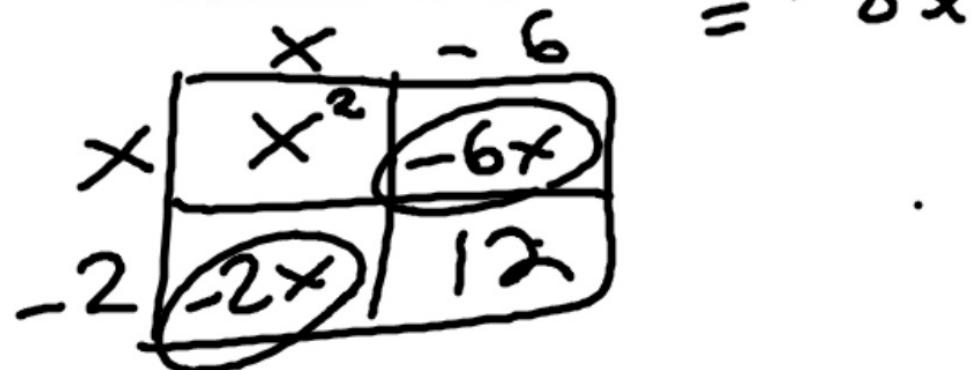
First      Outer      Inner      Last

$$= (x)(x) + (x)(5) + (-2)(x) + (-2)(5)$$

$$= x^2 + 5x + (-2x) - 10$$

$$= x^2 + 3x - 10$$

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



$$\begin{aligned} & -2x + 6 \\ & = -8x \end{aligned}$$

$$)(x+2)$$

$$6. (2x-1)(x+5)$$

$$2x^2 + 9x - 5$$

$$2)(8m+2)$$

$$9. (k+4)(5k-1)$$

$$\begin{array}{c} 5k \\ \hline -1 \\ \hline 5x^2 + 19x - 4 \end{array}$$

A student's work showing the multiplication of  $(5k-1)(5k+4)$  using a box method. The first row has  $5k$  above it and  $-1$  to its left. The first column has  $5k$  to its left and  $-1$  above it. The box contains four terms:  $25k^2$ ,  $20k$ ,  $-5k$ , and  $-4$ . The terms  $20k$  and  $-5k$  are circled in blue. The final result  $5x^2 + 19x - 4$  is circled in blue.

18

$$12. (5t+4)(2t-6)$$

$$\begin{array}{c} 2t \\ \hline -6 \\ \hline 10t^2 - 22t - 24 \end{array}$$

A student's work showing the multiplication of  $(5t+4)(2t-6)$  using a box method. The first row has  $2t$  above it and  $-6$  to its left. The first column has  $2t$  to its left and  $-6$  above it. The box contains four terms:  $10t^2$ ,  $-10t$ ,  $-10t$ , and  $-24$ . The terms  $-10t$  and  $-10t$  are circled in blue. The final result  $10t^2 - 22t - 24$  is circled in blue.

Glencoe Algebra 1