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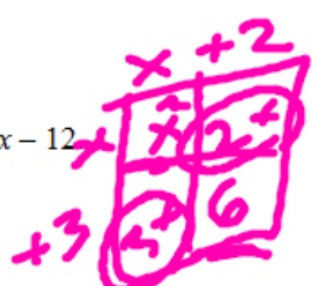
$(x + 3)(x - 4)$

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

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

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

$\quad = x^2 - x - 12$

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 $x^2 - x - 12$.

Exercises

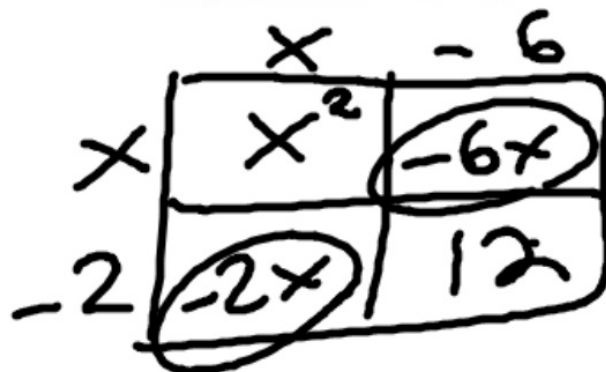**Find each product.**

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

$x^2 + 5x + 6$

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

$x^2 - 3x - 4$

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

$x^2 - 8x + 12$

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

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

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

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

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

$\qquad$ First $\quad$ Outer $\quad$ Inner $\quad$ Last

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

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

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

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

$-2x + 6y$

$= -8x$

)($y + 2$)

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

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

2)($8m + 2$)

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

	$1k$	4
$5x$	$5k^2$	$20k$
-1	$-1k$	-4

$$5k^2 + 19k - 4$$

	$2t$	-6
$5t$	$10t^2$	$-30t$
4	$8x$	-24

$$19t^2 - 22t - 24$$

18