

EXERCISES

Guided Practice

CRITICAL THINKING about the Lesson

- Factor $x^2 - 4x + 3$. When testing possible factorizations, why is it unnecessary to test $(x - 1)(x + 3)$ and $(x + 1)(x - 3)$?
- Factor $x^2 + 2x - 3$. When testing possible factorizations, why is it unnecessary to test $(x - 1)(x - 3)$ and $(x + 1)(x + 3)$?
- What is the discriminant of $ax^2 + bx + c$?
 $b^2 - 4ac$
- If the discriminant of $ax^2 + bx + c$ is 35, can the trinomial be factored with integer coefficients? Explain.
No. The discriminant must be the square of an integer.

1., 2. See margin.

Independent Practice

In Exercises 5–10, choose the correct factorization. (If neither is correct, find the correct factorization.)

- $x^2 + x - 20$ a
a. $(x - 4)(x + 5)$
b. $(x + 4)(x - 5)$
- $3x^2 - 7x - 6$ a
a. $(x - 3)(3x + 2)$
b. $(x + 3)(3x - 2)$
- $x^2 + 8x + 16$ b
a. $(x + 2)(x + 8)$
b. $(x + 4)(x + 4)$
- $6x^2 - 7x - 5$ b
a. $(6x + 1)(x - 5)$
b. $(2x + 1)(3x - 5)$
- $x^2 - 10x + 24$ a
a. $(x - 6)(x - 4)$
b. $(x - 12)(x + 2)$
- $2x^2 - 7x - 9$
a. $(x - 1)(2x + 9)$
b. $(2x - 1)(x + 9)$
Neither, $(x + 1)(2x - 9)$

In Exercises 11–28, factor the trinomial.

- $x^2 + 3x - 4$ $(x + 4)(x - 1)$
- $x^2 - 5x + 6$ $(x - 2)(x - 3)$
- $x^2 + 3x - 18$ $(x + 6)(x - 3)$
- $y^2 - 16y - 36$ $(y - 18)(y + 2)$
- $x^2 - 10x + 24$ $(x - 6)(x - 4)$
- $x^2 + 13x + 22$
- $x^2 + 15x + 50$ $(x + 10)(x + 5)$
- $y^2 + 30y + 216$ $(y + 12)(y + 18)$
- $y^2 - 35y + 300$
- $t^2 - 4t - 21$ $(t - 7)(t + 3)$
- $3x^2 + 8x + 5$ $(3x + 5)(x + 1)$
- $6x^2 + 5x - 4$
- $2x^2 - x - 21$ $(2x - 7)(x + 3)$
- $3x^2 + 11x + 10$ $(3x + 5)(x + 2)$
- $48 - 16y + y^2$
- $32 + 12x + x^2$ $(x + 4)(x + 8)$
- $2x^2 - x - 6$ $(2x + 3)(x - 2)$
- $5 + 34x - 7x^2$

In Exercises 29–34, use the discriminant to decide whether the polynomial can be factored with integer coefficients. If it can be factored, then find the factors:

- $12x^2 - 11x + 3$ Cannot
 - $2x^2 - 5x - 12$ $(2x + 3)(x - 4)$
 - $14x^2 - 19x - 40$ $(7x + 8)(2x - 5)$
 - $24x^2 + 3x - 11$ Cannot
 - $6x^2 - 10x + 4$ $2(3x - 2)(x - 1)$
 - $35x^2 - 12x + 1$ Cannot
35. **Geometry** The area of a rectangle is given by $A = x^2 + 4x - 5$. Find expressions for possible lengths and widths of the rectangle. $x + 5, x - 1$
36. **Geometry** The area of a circle is given by $A = \pi(4x^2 + 12x + 9)$.