# 4-4 **Reteaching** (continued)

### Factoring Quadratic Expressions

- $a^2 + 2ab + b^2 = (a + b)^2$      Factoring perfect square trinomials

  $a^2 - 2ab + b^2 = (a - b)^2$

- $a^2 - b^2 = (a + b)(a - b)$      Factoring a difference of two squares

**Problem**

What is $25x^2 - 20x + 4$ in factored form?

There are three terms. Therefore, the expression may be a perfect square trinomial.

$a^2 = 25x^2$ and $b^2 = 4$      Find $a^2$ and $b^2$.

$a = 5x$ and $b = 2$      Take square roots to find $a$ and $b$.

Check that the choice of $a$ and $b$ gives the correct middle term.

$2ab = 2 \cdot 5x \cdot 2 = 20x$

Write the factored form.

$a^2 - 2ab + b^2 = (a - b)^2$

$25x^2 - 20x + 4 = (5x - 2)^2$

**Check**      $(5x - 2)^2$      You can check your answer by multiplying the factors together.

         $(5x - 2)(5x - 2)$      Rewrite the square in expanded form.

         $25x^2 - 10x - 10x + 4$      Distribute.

         $25x^2 - 20x + 4$      Simplify.

## Exercises

Factor each expression.

**23.** $x^2 - 12x + 36$      **24.** $x^2 + 30x + 225$      **25.** $9x^2 - 12x + 4$

**26.** $x^2 - 64$      **27.** $9x^2 - 42x + 49$      **28.** $25x^2 - 1$

**29.** $27x^2 - 12$      **30.** $49x^2 + 42x + 9$      **31.** $16x^2 - 32x + 16$

**32.** $9x^2 - 16$      **33.** $8x^2 - 18$      **34.** $81x^2 + 126x + 49$

**35.** $125x^2 - 100x + 20$      **36.** $-x^2 + 196$      **37.** $-16x^2 - 24x - 9$