Bell Work

What is b?

$(x + 8)^2 = x^2 + bx + 64$

Solving a Quadratic Equation Using Square Roots

Solve $x^2 - 16x + 64 = 100$ using square roots.

Solve.

$$x^2 + 4x + 4 = 36$$

Solve.

$$x^2 - 6x + 9 = 1$$

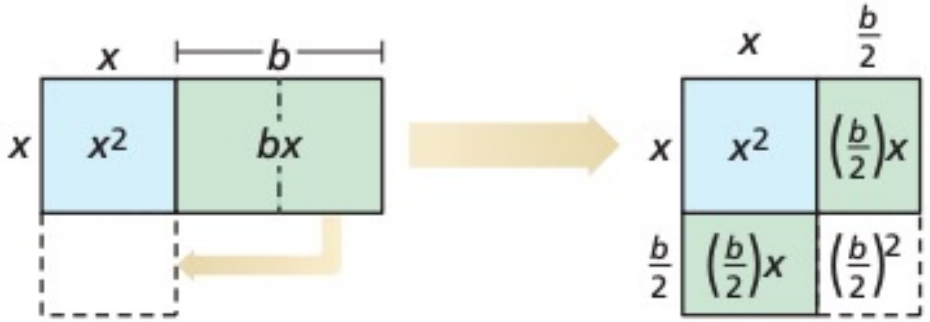
KEY IDEA

Completing the Square

Words To complete the square for the expression $x^2 + bx$, add $\left(\frac{b}{2}\right)^2$.

Diagrams In each diagram, the combined area of the shaded regions is $x^2 + bx$.

Adding $\left(\frac{b}{2}\right)^2$ completes the square in the second diagram.



Algebra $x^2 + bx + \left(\frac{b}{2}\right)^2 = \left(x + \frac{b}{2}\right)\left(x + \frac{b}{2}\right) = \left(x + \frac{b}{2}\right)^2$

Complete the square for $x^2 + 14x$. Then factor the trinomial.

Complete the square for $x^2 - 2x$. Then factor the trinomial.

Complete the square for $x^2 - 9x$. Then factor the trinomial.

Solving $ax^2 + bx + c = 0$ when $a = 1$

Solve $x^2 - 10x + 7 = 0$ by completing the square.

Solve $x^2 - 8x - 5 = 0$ by completing the square.

Solving $ax^2 + bx + c = 0$ when $a \neq 1$

Solve $3x^2 + 12x + 15 = 0$ by completing the square.

Solve $6x(x+2) = -42$ by completing the square.

Writing Quadratic Functions in Vertex Form

Write $y = x^2 - 12x + 18$ in vertex form. Then identify the vertex.

Write $y = x^2 - 2x - 6$ in vertex form. Then identify the vertex.