EXAMPLE 6 TAKS PRACTICE: Multiple Choice

The dimensions of a rectangle are $x + 2$ and $x + 1$. Which expression represents the area of the rectangle?

Ⓐ $x^2 + 2$ Ⓑ $x^2 + 3x + 2$ Ⓒ $x^2 + 2x + 2$ Ⓓ $x^2 + 2x$

ELIMINATE CHOICES

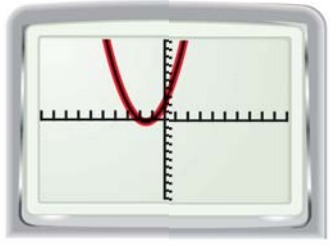
When you multiply $x + 2$ and $x + 1$, the product will have a constant term of $2 \cdot 1 = 2$. So, you can eliminate choice D.

Solution

Area = length • width	Formula for area of a rectangle
$= (x + 2)(x + 1)$	Substitute for length and width.
$= x^2 + 2x + 1x + 2$	Use FOIL pattern.
$= x^2 + 3x + 2$	Combine like terms.

▶ The correct answer is B. Ⓐ Ⓑ Ⓒ Ⓓ

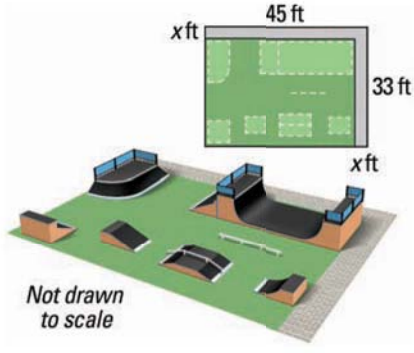
CHECK You can use a graph to check your answer. answer. Use a graphing calculator to display the graphs of $Y = (x + 2)(x + 1)$ and $Y_2 = x^2 + 3x + 2$ in the same viewing window. Because the graphs coincide, you know that the product of $x + 2$ and $x + 1$ is $x^2 + 3x + 2$.



EXAMPLE 7 TAKS REASONING: Multi-Step Problem

SKATEBOARDING You are designing a rectangular skateboard park on a lot that is on the corner of a city block. The park will have a walkway along two sides. The dimensions of the lot and the walkway are shown in the diagram.

- Write a polynomial that represents the area of the skateboard park.
- What is the area of the park if the walkway is 3 feet wide?



Solution

STEP 1 **Write** a polynomial using the formula for the area of a rectangle. The length is $45 - x$. The width is $33 - x$.

Area = length • width	Formula for area of a rectangle
$= (45 - x)(33 - x)$	Substitute for length and width.
$= 1485 - 45x - 33x + x^2$	Multiply binomials.
$= 1485 - 78x + x^2$	Combine like terms.

STEP 2 **Substitute** 3 for x and evaluate.

$$\text{Area} = 1485 - 78(3) + (3)^2 = 1260$$

▶ The area of the park is 1260 square feet.