

Your Notes

✔ **Checkpoint** Find the product.

1. $2x^2(x^3 - 5x^2 + 3x - 7)$

2. $(a^2 + 5a - 4)(2a + 3)$

Example 3 *Multiply binomials using the FOIL pattern*

Find the product $(2c + 7)(c - 9)$.

Solution

$$\begin{aligned}(2c + 7)(c - 9) \\ &= 2c(\underline{\quad}) + 2c(\underline{\quad}) + 7(\underline{\quad}) + 7(\underline{\quad}) \\ &= \underline{\hspace{4cm}} \\ &= \underline{\hspace{4cm}}\end{aligned}$$

✔ **Checkpoint** Complete the following exercise.

3. Find the product $(m + 3)(5m - 4)$.

Your Notes

Example 4 Multiply polynomials to find an area

Area The dimensions of a rectangle are $x + 4$ and $x + 5$. Write an expression that represents the area of the rectangle.

Solution

$$\text{Area} = \text{length} \cdot \text{width}$$

$$= (\quad)(\quad)$$

$$= \underline{\hspace{2cm}}$$

$$= \underline{\hspace{2cm}}$$

Formula for area of a rectangle

Substitute for length and width.

Multiply binomials.

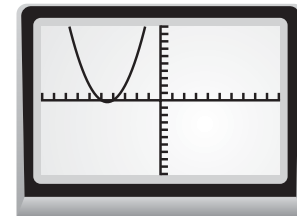
Combine like terms.

CHECK Use a graphing calculator to check your answer. Graph

$$y_1 = \underline{\hspace{2cm}} \text{ and}$$

$$y_2 = \underline{\hspace{2cm}} \text{ in the same viewing window. The graphs}$$

$\underline{\hspace{2cm}}$, so the product of $x + 4$ and $x + 5$ is $\underline{\hspace{2cm}}$.

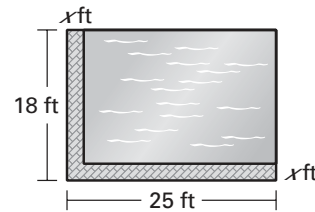


✓ **Checkpoint** Complete the following exercise.

4. The dimensions of a rectangle are $x + 3$ and $x + 11$. Write an expression that represents the area of the rectangle.

Example 5 Solve a multi-step problem

Walkway You are making a walkway around part of your swimming pool. The dimensions of the swimming pool and walkway are shown in the diagram.



- Write a polynomial that represents the area of the swimming pool.
- What is the area of the swimming pool if the walkway is 2 feet wide?

Solution

Step 1 Write a polynomial using the formula for the area of a rectangle. The length is _____. The width is _____.

$$\begin{aligned} \text{Area} &= \underline{\hspace{2cm}} \cdot \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \\ &= \underline{\hspace{2cm}} \end{aligned}$$

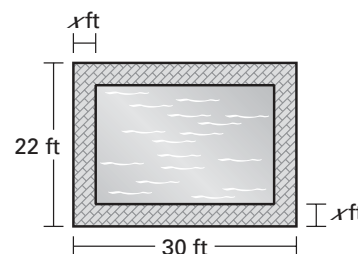
Step 2 Substitute ___ for x and evaluate.

$$\text{Area} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

The area of the swimming pool is _____.

Checkpoint Complete the following exercise.

5. Swimming Pool Your neighbor has a walkway around his entire pool as shown in the diagram. The width of the walkway is the same on every side. Write a polynomial that represents the area of the pool. What is the area of the pool if the walkway is 3 feet wide?



Homework