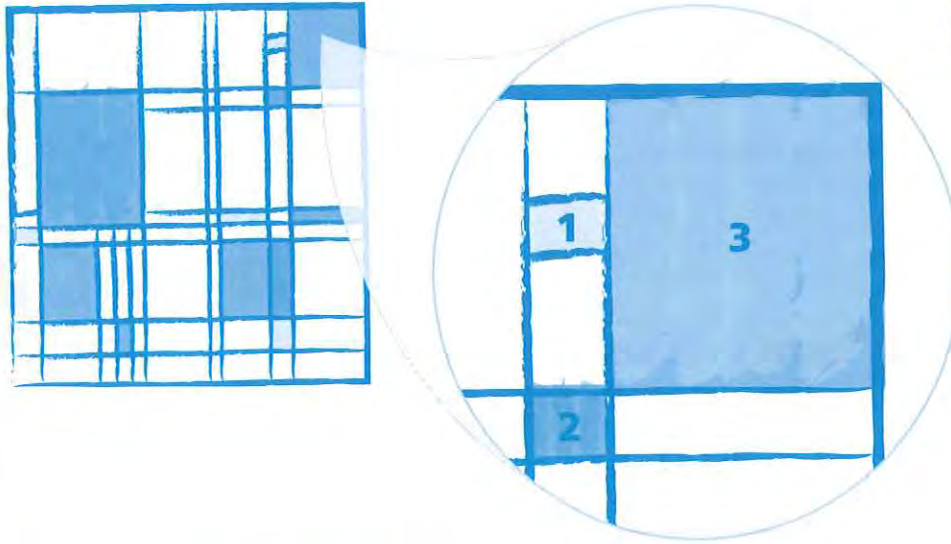


7-2

Multiplying Polynomials

MODEL & DISCUSS

Samantha makes the abstract painting shown using vertical and horizontal lines and four colors.



A. How can you use mathematics to describe the areas of Rectangle 1 and Rectangle 2?

B. **Look for Relationships** How can you use mathematics to describe the area of Rectangle 3? © MP.7

HABITS OF MIND

Communicate Precisely What information would you need to find the percentage of the painting that is red? Explain. © MP.6

EXAMPLE 1  **Try It! Multiply a Monomial and a Trinomial**

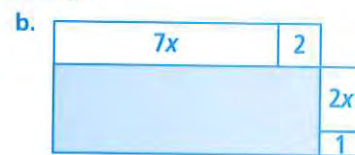
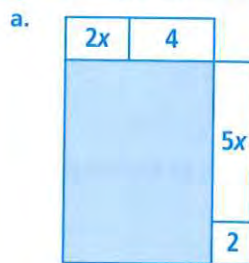
1. Find each product.

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

b. $-4x(2x^2 - 3x + 5)$

EXAMPLE 2  **Try It! Use a Table to Find the Product of Polynomials**

2. Find the area of each green rectangle.

**EXAMPLE 3**  **Try It! Multiply Binomials**

3. Find each product.

a. $(5x - 4)(2x + 1)$

b. $(3x - 5)(2 + 4)$

HABITS OF MIND

Reason Could you use an area model to find the product of polynomials that have subtracted terms? Explain. © MP.2

**EXAMPLE 4** **Try It! Multiply a Trinomial and a Binomial**

4. Find each product.

a. $(2x - 5)(-3x^2 + 4x - 7)$

b. $(-3x^2 + 1)(2x^2 + 3x - 4)$

EXAMPLE 5 **Try It! Closure and Multiplication**

5. Why is it important that the product of two polynomials have only whole number exponents?

EXAMPLE 6 **Try It! Apply Multiplication of Binomials**

6. Suppose the height of the phone in Example 6 were 1.9 times the width but all of the other conditions were the same. What expression would represent the area of the phone's surface not occupied by the screen?

HABITS OF MIND

Generalize Does closure of polynomial multiplication depend on closure of polynomial addition and subtraction? Explain. © MP8

Do You UNDERSTAND?

- ESSENTIAL QUESTION** How does multiplying polynomials compare to multiplying integers?
- Use Appropriate Tools** When multiplying two variables, how is using the Distributive Property similar to using a table? © MP.5
- Error Analysis** Mercedes states that when multiplying $4x^3(x^3 + 2x^2 - 3)$ the product is $4x^9 + 8x^6 - 12x^3$. What was Mercedes's error? © MP.3
- Use Structure** When multiplying, why is the degree of the product different from the degree of the factors? © MP.7

Do You KNOW HOW?

Find each product.

5. $-2x^3(3x^2 - 4x + 7)$

6. $(2x + 6)(x - 4)$

7. $(x - 2)(3x + 4)$

8. $(5y - 2)(4y^2 + 3y - 1)$

9. $(3x^2 + 2x - 5)(2x - 3)$

10. Find the area of the rectangle.

