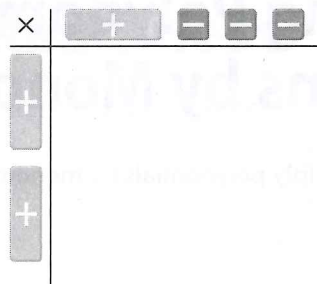


- (B) Use algebra tiles to model  $2x(x - 3)$ . Then write the expression.



The simplified expression for  
 $2x(x - 3) = \underline{\quad}x^2 - \underline{\quad}x$ .

**Reflect**

1. **Discussion** How do the tiles illustrate the idea of  $x^2$  geometrically?

---



---

2. **Discussion** How does the grid illustrate the Distributive Property?

---



---



---

**Explain 1 Multiplying Monomials**

When multiplying monomials, variables with exponents may need to be multiplied. Recall the Product of Powers Property, which states that  $a^m \cdot a^n = a^{(m+n)}$ .

**Example 1 Find each product.**

(A)  $(6x^3)(-4x^4)$   
 $(6x^3)(-4x^4)$   
 $= (6 \cdot -4)(x^3 \cdot x^4)$   
 $= (6 \cdot -4)(x^{3+4})$   
 $= -24x^7$

848

(B)  $(5xy^2)(7xy)$   
 $(5xy^2)(7xy)$   
 $= (5 \cdot 7)(x \cdot x)(y^2 \cdot y)$   
 $= (5 \cdot 7)(x^{1+1})(y^{2+1})$   
 $= 35x^2y^3$

**Reflect**

3. In the Product of Powers Property, do the bases need to be the same or can they be different?

---

**Your Turn**

4.  $(18y^2x^3z)(3x^8y^6z^4)$

54  $x^{11}y^8z^5$   
 LC: 54  
 Degree: 24

## Explain 2 Multiplying a Polynomial by a Monomial

Remember that the Distributive Property states that multiplying a term by a sum is the same thing as term by each part of the sum then adding the results.

**Example 2** Find each product.

(A)  $3x(3x^2 + 6x - 5)$

$$3x(3x^2 + 6x - 5)$$

$$= 3x(3x^2) + 3x(6x) + 3x(-5)$$

$$= 9x^{1+2} + 18x^{1+1} - 15x^1$$

$$= 9x^3 + 18x^2 - 15x$$

Distribute and simplify.

(B)  $2xy(5x^2y + 3xy^2 + 7xy)$

$$2xy(5x^2y + 3xy^2 + 7xy)$$

$$= 2xy(5x^2y) + 2xy(\quad) + 2xy(\quad)$$

$$= 10x^{1+2}y^{1+1} + \quad x^{\quad}y^{\quad} + \quad x^{\quad}y^{\quad}$$

$$= 10x^3y^2 + \quad x^{\quad}y^{\quad} + \quad x^{\quad}y^{\quad}$$

Distribute and simplify.

### Reflect

5. Is the product of a monomial and a polynomial always a polynomial? Explain. If so, how many terms does it have?

### Your Turn

6.  $2a^2(5b^2 + 3db + 6a^3 + 1)$

$$10a^2b^2 + 6a^3b + 12a^5 + 2a^2$$