

Reteaching 13-6 *Multiplying a Polynomial by a Monomial*

Use the GCF to write $36x^2y - 90x^2y^2$ as the product of two factors.

Multiply to check.

Write the prime factorization of each term to find the GCF.

$$\begin{aligned}
 36x^2y &= \boxed{2} \cdot \cancel{2} \cdot \cancel{3} \cdot \cancel{3} \cdot \boxed{x} \cdot \boxed{x} \cdot \boxed{y} \\
 90x^2y^2 &= \boxed{2} \cdot \cancel{3} \cdot \cancel{3} \cdot 5 \cdot \boxed{x} \cdot \boxed{x} \cdot \boxed{y} \cdot y \\
 \text{GCF} &= 2 \cdot 3 \cdot 3 \cdot x \cdot x \cdot y = 18x^2y
 \end{aligned}$$

Write each term as the product of $18x^2y$ and another factor.

$$36x^2y - 90x^2y^2 = 18x^2y(2) - 18x^2y(5y)$$

$$= 18x^2y(2 - 5y)$$

Use the Distributive Property.

$$\text{Thus } 36x^2y - 90x^2y^2 = 18x^2y(2 - 5y).$$

Check by multiplying $18x^2y(2 - 5y)$.

$$18x^2y(2 - 5y) = (18x^2y)(2) - (18x^2y)5y$$

Use the Distributive Property.

$$= (2 \cdot 18x^2y) - 5(18)x^2y \cdot y$$

Use the Commutative and Associative Properties to rearrange terms.

$$= 36x^2y - 90x^2y^2$$

Simplify.

The solution checks.

Complete to show how the given expression can be written as the product of two factors.

1. $5x + 5y = 5(\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

2. $-3m - 3n = -3(\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

3. $4x^3 + 4x^2y = \underline{\hspace{1cm}}(x + y)$

4. $6ab + 12b = \underline{\hspace{1cm}}(a + 2)$

Use the GCF of the terms to write each expression as the product of two factors.

5. $12x - 16y$ _____

6. $6a + 9b$ _____

7. $-9x^2 - 9y^2$ _____

8. $20m + 25n - 35k$ _____

Simplify each product.

9. $y(4x + y - 2x^2)$ _____

10. $3y(5y - 2x + 4xy)$ _____