

Study Guide

Multiplying a Polynomial by a Monomial

The example below shows how the distributive property can be used to multiply a polynomial by a monomial.

Example 1: $6a(a^2 + 5) = 6a(2a^2) + 6a(5)$
 $= 12a^3 + 30a$

Many equations contain polynomials that must be added, subtracted, or multiplied before the equation can be solved.

Example 2:

Solve $-5 - (10 - 3p) = 12$.
 $-5 - (10 - 3p) = 12$
 $-5 - 10 + 3p = 12$
 $-15 + 3p = 12$
 $-15 + 15 + 3p = 12 + 15$
 $3p = 27$
 $\frac{3p}{3} = \frac{27}{3}$
 $p = 9$

Example 3:

Solve $4(n - 2) + 5n = 6(3 - n) + 18$.
 $4(n - 2) + 5n = 6(3 - n) + 18$
 $4n - 8 + 5n = 18 - 6n + 18$
 $9n - 8 = 36 - 6n$
 $9n + 6n - 8 + 8 = 36 + 8 - 6n + 6n$
 $15n = 44$
 $\frac{15n}{15} = \frac{44}{15}$
 $n = 2\frac{14}{15}$

Find each product.

1. $5(2a + 3b)$

2. $3x(4x - 2y)$

3. $-4(a^2 - b^2)$

4. $8b(b^2 - \frac{1}{2}b)$

5. $-5t^2(\frac{1}{25}t^2 - \frac{1}{25}t + \frac{1}{5})$

6. $(\frac{1}{2}x + y)(\frac{1}{2}y)$

Simplify.

7. $4r(2r^2 - 3r + 5) + 6r(4r^2 + 2r + 8)$

8. $2b(b^2 + 4b + 8) - 3b(3b^2 + 9b - 18)$

Solve each equation.

9. $3(x + 5) - 6 = 18$

10. $3x(x - 5) - 3x^2 = -30$

11. $(4y - 3) - 8y + 6 = 19$

12. Ria's corn field has a perimeter of 18,000 meters. The length of one side is 3 meters less than twice the width. What are the dimensions of the field?

13. Three sides of a triangle have measures that are consecutive even integers. What are the lengths of the sides if the perimeter is 114 meters?