NAME _____ DATE _____

9-3 Multiplying a Polynomial by a Monomial (Pages 394–398)

Use the Distributive Property to multiply a polynomial by a monomial.

EXAMPLES

A Find $4z^2(-2z^2 + 7z)$.

$4z^2(-2z^2 + 7z)$

$= 4z^2(-2z^2) + 4z^2(7z)$ *Distributive Property*

$= -8z^4 + 28z^3$

B Solve $4(n - 5) + 2 = 5(6 - n) + 3n$.

$4(n - 5) + 2 = 5(6 - n) + 3n$

$4(n) - 4(5) + 2 = 5(6) - 5(n) + 3n$

$4n - 20 + 2 = 30 - 5n + 3n$

$4n - 18 = 30 - 2n$

$6n - 18 = 30$

$6n = 48$

$n = 8$

Try These Together

Find each product.

1. $-2(2a + 8)$

2. $c(6c^2 + 3c)$

HINT: Use the Distributive Property to multiply the monomial by every term in the polynomial.

PRACTICE

Find each product.

3. $2n(9n^2 - 2n - 12)$

4. $8g^2(g^2 - 6g - 2)$

5. $8s^2(2s^2 - 4s + 4)$

6. $-\frac{1}{2}x(10x^2 + 6x - 8)$

Simplify.

7. $u(7u - 2) + 25u$

8. $5b(-b^2 + 7b - 1) + 9(3b^3 - 6b + 2)$

9. $4r^2(3r - 7) + r(7r^2 - 5r + 2) - 4(r^2 + 9r)$

10. $c(c^3 + c - 2) + 4(c^2 - 2c)$

Solve each equation.

11. $4(-6x + 9) + 4 = -4(-5x + 12)$

12. $12(2y - 9) = 6(y - 17)$

13. $s(s + 4) - s(s + 7) = -5s - 2$

14. $a(3a + 2) + a(6a + 2) + 4 = a(6a + 3a) + 9$

15. Gardening A rectangular garden is x feet wide. The length of the garden is 3 feet more than twice the width. Write a polynomial that represents the area of the garden in square feet.

16. **Standardized Test Practice** Simplify $-2x(3x - 4) + 6x$.

A $8x$ **B** $7x - 4$ **C** $-6x^2 - 2x$ **D** $-6x^2 + 14x$

Answers: **1.** $-4a - 16$ **2.** $6c^3 + 3c^2$ **3.** $18n^3 - 4n^2 - 24n$ **4.** $8g^4 - 48g^3 - 16g^2$ **5.** $16s^4 - 32s^3 + 32s^2$ **6.** $-5x^3 - 3x^2 + 4x$ **7.** $7u^2 + 23u$ **8.** $22b^3 + 35b^2 - 59b + 18$ **9.** $19r^3 - 37r^2 - 34r$ **10.** $c^4 + 5c^2 - 10c$ **11.** 2 **12.** $\frac{1}{3}$ **13.** -1 **14.** $1\frac{1}{4}$ **15.** $2x^2 + 3x$ **16.** D