#4 Monomial x Polynomial

Boy measuring stick...

1) $7(2m^2+5)$
$14m^2+35$

2) $-3(8m^2-4m)$
$-24m^2+12m$

3) $2m(m^3+9)$
$2m^4+18m$

4) $m^2(-5m-6)$
$-5m^3-6m^2$

5) $9(4a^2-a+2)$
$36a^2-9a+18$

6) $3a(12+5a-a^2)$
$36a+15a^2-3a^3$

7) $-4a^2(7a^2+15a-1)$
$-28a^4-60a^3+4a^2$

8) $2a^3(6a^2-2a+3)$
$12a^5-4a^4+6a^3$

9) $x^2y(x^2-y^2)$
$x^4y-x^2y^3$

10) $-5xy^2(-x^3y+4xy^3)$
$5x^4y^3-20x^2y^5$

11) $9xy(2x^2y+9xy-4xy^2)$
$18x^3y^2+81x^2y^2-36x^2y^3$

12) $-x^2y^2(5x^2-8xy+y^2)$
$-5x^4y^2+8x^3y^3-x^2y^4$

13) $3cd^4(2c^4-5c^2d^2-18d^4)$
$6c^5d^4-15c^3d^6-54cd^8$

14) $8c^2d^2(3c^4d^3+10c^3d^4+11)$
$24c^6d^5+80c^5d^6+88c^2d^2$

15) $-9c^2d^3(16c^5d^2-5c^2d^5)$
$-144c^7d^5+45c^9d^8$

16) $4c^5(3c^2-2cd-3d^2)$
$12c^7-8c^6d-12c^5d^2$

#7

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8-6 Study Guide and Intervention *(continued)*

Multiplying a Polynomial by a Monomial

Solve Equations with Polynomial Expressions Many equations contain polynomials that must be added, subtracted, or multiplied before the equation can be solved.

Example **Solve $4(n - 2) + 5n = 6(3 - n) + 19$.**

$4(n - 2) + 5n = 6(3 - n) + 19$	Original equation
$4n - 8 + 5n = 18 - 6n + 19$	Distributive Property
$9n - 8 = 37 - 6n$	Combine like terms.
$15n - 8 = 37$	Add $6n$ to both sides.
$15n = 45$	Add 8 to both sides.
$n = 3$	Divide each side by 15.

The solution is 3.

Exercises

Solve each equation.

1. $2(a - 3) = 3(-2a + 6)$ 3
2. $3(x + 5) - 6 = 18$ 3
3. $3x(x - 5) - 3x^2 = -30$ 2
4. $6(x^2 + 2x) = 2(3x^2 + 12)$ 2
5. $4(2p + 1) - 12p = 2(8p + 12)$ -1
6. $2(6x + 4) + 2 = 4(x - 4)$ $-3\frac{1}{4}$
7. $-2(4y - 3) - 8y + 6 = 4(y - 2)$ 1
8. $c(c + 2) - c(c - 6) = 10c - 12$ 6
9. $3(x^2 - 2x) = 3x^2 + 5x - 11$ 1
10. $2(4x + 3) + 2 = -4(x + 1)$ -1
11. $3(2h - 6) - (2h + 1) = 9$ 7
12. $3(y + 5) - (4y - 8) = -2y + 10$ -13
13. $3(2a - 6) - (-3a - 1) = 4a - 2$ 3
14. $5(2x^2 - 1) - (10x^2 - 6) = -(x + 2)$ -3
15. $3(x + 2) + 2(x + 1) = -5(x - 3)$ $\frac{7}{10}$
16. $4(3p^2 + 2p) - 12p^2 = 2(8p + 6)$ $-\frac{3}{2}$

Answers (Lesson 8-6)

#8

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8-6 Practice (Average)

Multiplying a Polynomial by a Monomial

Lesson 8-6

Find each product.

1. $2h(-7h^2 - 4h)$ $-14h^3 - 8h^2$
2. $6pq(3p^3 + 4q)$ $18p^3q + 24pq^2$
3. $-2u^2n(4u - 2n)$ $-8u^3n + 4u^2n^2$
4. $5jk(3jk + 2k)$ $15j^2k^2 + 10jk^2$
5. $-3rs(-2s^2 + 3r)$ $6rs^3 - 9r^2s$
6. $4mg^2(2mg + 4g)$ $8m^2g^3 + 16mg^3$
7. $-\frac{1}{4}m(8m^2 + m - 7)$ $-2m^3 - \frac{1}{4}m^2 + \frac{7}{4}m$
8. $-\frac{2}{3}n^2(-9n^2 + 3n + 6)$ $6n^4 - 2n^3 - 4n^2$

Simplify.

9. $-2\ell(3\ell - 4) + 7\ell$ $-6\ell^2 + 15\ell$
10. $5w(-7w + 3) + 2w(-2w^2 + 19w + 2)$ $-4w^3 + 3w^2 + 19w$
11. $6t(2t - 3) - 5(2t^2 + 9t - 3)$ $2t^2 - 63t + 15$
12. $-2(3m^3 + 5m + 6) + 3m(2m^2 + 3m + 1)$ $9m^2 - 7m - 12$
13. $-3g(7g - 2) + 3(g^2 + 2g + 1) - 3g(-5g + 3)$ $-3g^2 + 3g + 3$
14. $4z^2(z - 7) - 5z(z^2 - 2z - 2) + 3z(4z - 2)$ $-z^3 - 6z^2 + 4z$

Solve each equation.

15. $5(2s - 1) + 3 = 3(3s + 2)$ 8
16. $3(3u + 2) + 5 = 2(2u - 2)$ -3
17. $4(8n + 3) - 5 = 2(6n + 8) + 1$ $\frac{1}{2}$
18. $8(3b + 1) = 4(b + 3) - 9$ $-\frac{1}{4}$
19. $h(h - 3) - 2h = h(h - 2) - 12$ 4
20. $w(w + 6) + 4w = -7 + w(w + 9)$ -7
21. $t(t + 4) - 1 = t(t + 2) + 2$ $\frac{3}{2}$
22. $u(u - 5) + 8u = u(u + 2) - 4$ -4

23. **NUMBER THEORY** Let x be an integer. What is the product of twice the integer added to three times the next consecutive integer? $5x + 3$

INVESTMENTS For Exercises 24–26, use the following information.

Kent invested \$5,000 in a retirement plan. He allocated x dollars of the money to a bond account that earns 4% interest per year and the rest to a traditional account that earns 5% interest per year.

24. Write an expression that represents the amount of money invested in the traditional account. $5,000 - x$
25. Write a polynomial model in simplest form for the total amount of money T Kent has invested after one year. (*Hint:* Each account has $A + IA$ dollars, where A is the original amount in the account and I is its interest rate.) $T = 5,250 - 0.01x$
26. If Kent put \$500 in the bond account, how much money does he have in his retirement plan after one year? \$5,245

Answers (Lesson 8-6)

#9

Mystery...

E) $3x(+8)+4x(-1)+5x(+2)$

$\boxed{12x+9}$

E) $3x(8x-5)$

$\boxed{24x^2-15x}$

O) $9x(-10)+2x^2+x^2(+4)$

$\boxed{3x^2+9x-6}$

S) $2x^2(x^2+7x+4)$

$\boxed{2x^4+14x^3+8x^2}$

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

$\boxed{12x-20}$

G) $2x(x)=2x^2$

$x(x)=1x^2$

$2x(2x)=+4x^2$

$\boxed{7x^2}$

S) $3x-2$

$+6x+6$

$9x+4$

$13x+11$

$-(9x+4)$

$\boxed{4x+7}$

R) $9x(16x+5)$

$144x^2+45x$

$4x(7x-2)$

$28x^2-8x$

$144x^2+45x-(28x^2-8x)$

$\boxed{116x^2+53x}$

D) $7x+2$

$4x-5$

$+5x$

$16x-3$

$21x+2$

$-(16x-3)$

$\boxed{5x+5}$

A) $2x^2-9$

$+3x+4$

$2x^2+3x-5$

$3x^2-2x-5$

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

$\boxed{x^2-5x}$

W) $6x^2(11x+20)$

$66x^3+120x^2$

$8(10x^2-3x)$

$80x^2-24x$

$66x^3+120x^2-(80x^2-24x)$

$\boxed{66x^3+40x^2+24x}$

R) $3x(5x-12)$

$15x^2-36x$

$x(x+2)=(x^2+2x)4$

$4x^2+8x$

$15x^2-36x-(4x^2+8x)$

$\boxed{11x^2-44x}$