EXERCISES

For more practice, see *Extra Practice*.

A Practice by Example

Simplify each expression.

Example 1 (page 683)

1. $x^5 \cdot x$
2. $5a \cdot 3a$
3. $(-8y)(2y)$
4. $(-3t^2)(-4t^3)$
5. $4g^4 \cdot 3g^3$
6. $(-z^3)(6z^2)$
7. $(7x^2)(-2x^3)$
8. $(10s^2)(-4s)$
9. $(5c^3)(-4c^4)$

Example 2 (page 684)

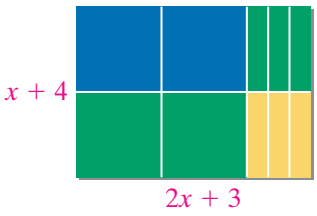
Simplify each expression. Exercises 10 and 11 have been started for you.

10. $a(a - 3) = a \cdot a - a \cdot 3$
11. $2m(m - 7) = 2m \cdot m - 2m \cdot 7$
12. $7(3s^2 + 1)$
13. $-3y(y^2 - 6y)$
14. $2k(5k - 1)$
15. $-3d^2(d - 4)$

Example 3 (page 684)

State the factors and the product shown in each area model.

16.



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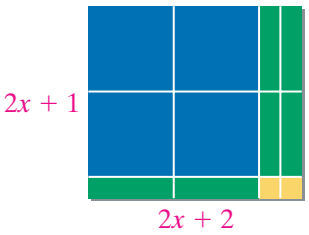


Draw an area model or use algebra tiles to simplify each expression.

18. $2g(g + 5)$
19. $v(4v + 1)$
20. $x(3x + 6)$
21. $2r(r + 7)$
22. $3m(m + 3)$
23. $a(2a + 1)$

B Apply Your Skills

Draw a tile model to find the area of each rectangle.

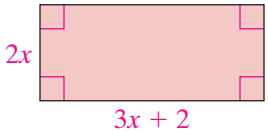
24. length $= x$, width $= x + 3$
25. length $= x$, width $= 2x + 1$
26. length $= 2x$, width $= x + 2$

Use the Distributive Property to simplify each expression.

27. $3p(5p^2 + 1)$
28. $-5h(h^2 - 3)$
29. $2n(-3n^2 + 1)$
30. $-8b(3b^2 - 2b)$
31. $7x^2(5x^2 + 4x - 4)$
32. $-w^2(w^2 + 2w - 4)$

Find the area of each figure.

33.



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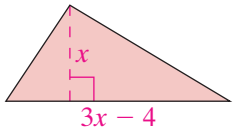

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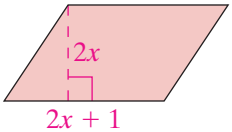
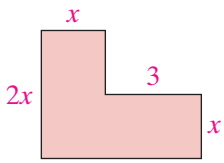


36. **Writing in Math** Explain the similarities between multiplying two binomials and multiplying a polynomial by a monomial.

37. Error Analysis A student rewrote $2x^2(x^2 + 3x - 3)$ as $2x^4 + 3x - 3$. What error did the student make?

Write an expression for the area of each shaded region.

38.



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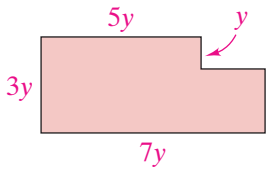


C Challenge

Find the factors of each polynomial. You can find the factors of a polynomial by finding the GCF of the terms of the polynomial.

Sample

$2a^2 + 6a$ ← **The GCF is 2*a*.**
$2a \cdot a + 2a \cdot 3$ ← **Write each term using 2*a* as a factor.**
$2a(a + 3)$ ← **Use the Distributive Property.**

40. $3x^2 + 9$ **41.** $5y^2 + 10y$ **42.** $8a^3 + 4a^2 + 12a$

43. Stretch Your Thinking It takes 4 hours to fill a swimming pool with the drain closed. It takes 5 hours to drain the same pool. When Joey began to fill the pool, he accidentally left the drain open. How long did it take before the pool was full?

Test Prep

Multiple Choice

44. Which monomial is the product of $(-4x^3) \cdot (-4x^3)$?

A. $-8x^3$ **B.** $16x^3$ **C.** $16x^6$ **D.** $-8x^6$

45. What number must you multiply $5x + 4$ by to equal $-10x^2 - 8x$?

F. $-5x$ **G.** $2x$ **H.** $5x$ **I.** $-2x$

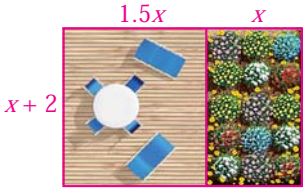
46. What is the product of $-3x$ and $x^2 - 2x + 3$?

A. $-3x^3 + 6x^2 - 9x$ **B.** $-3x^3 - 6x + 9$

C. $-3x^2 + 6x - 9$ **D.** $-3x^2 - 2x + 3$

Short Response

47. The drawing at the right shows a yard divided into two sections. The left section has a patio, and the right section has a garden. Find the area of the entire yard. Explain your work.



Take It to the NET
Online lesson quiz at **www.PHSchool.com**
Web Code: aca-1210

Mixed Review

Lesson 12-4 **Do the data in each table represent a linear function? If so, write a rule for the function.**

48.

x	−1	2	5	8
y	3	−6	−15	−24

49.

x	0	1	2	3
y	−2	−4	−16	−32

Lesson 12-3 **Graph each linear function.**

50. $y = 7 - 3x$

51. $y = 8x + 10$

52. $y = -x + 2$

53. $y = 6x - 5$