

EXERCISES

For more practice, see *Extra Practice*.

A Practice by Example

Example 1
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Write a variable expression for each model.



Example 2
(page 674)

Draw or use tiles to simplify each polynomial.

4. $x^2 + 3x + x^2 + 1 + 2x$ 5. $x + 3x^2 + x - 4$
 6. $-2 - 2x - 2x^2 + 3x + 3 + 3x^2$ 7. $7x - x^2 - 5x + 3x^2$

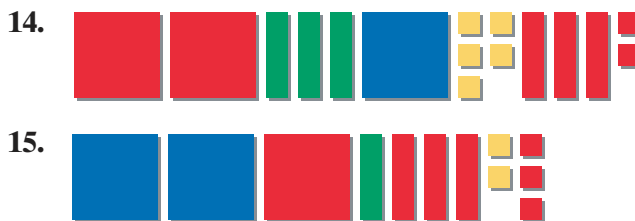
Example 3
(page 674)

Use properties to simplify each polynomial.

8. $3x^2 - 8 + 2x - 4x + 3 - 5x^2$ 9. $3x^2 + 6x - 2 - 4x$
 10. $3 - 7x + 3x^2 + 2x^2 + 2x$ 11. $4x^2 - 7x - 3x^2 + 9x - 1$
 12. $-2x^2 - 3x + 1 + 2x + x + 2x^2$ 13. $-1 + 2x^2 - 2x + 2 + 3x$

B Apply Your Skills

Write and simplify the polynomial represented by each model.



16. Science A ball is thrown upward at a speed of 48 feet per second. Its height in feet, after t seconds, is given by the polynomial $48t - 16t^2$. Evaluate the polynomial to find the height after 3 seconds.

17. Geometry To find the surface area of a cylinder, you can use the polynomial $\pi r^2 + \pi r^2 + \pi dh$, where r is the radius, d the diameter, and h the height of the cylinder. Simplify the polynomial.

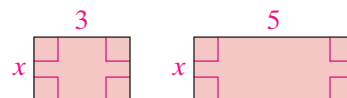
Simplify each polynomial.

18. $-5n + 2n + k + k + 10n$ 19. $13 + g - 3r + 10g + 14r$
 20. $11c + 9b - 7 - 16b + c - 2$ 21. $9t - p^3 + t + 7t^3 + 7p^3 - 2t^3$

Evaluate each polynomial for $y = 4$.

22. $y^2 + 3y - 10$ 23. $2y^2 - y + 3$ 24. $-2y - 3y^2$

25. a. **Geometry** Write an expression for the area of each rectangle at the right.



b. Write and simplify an expression for the area of the two rectangles combined.

Find the degree of each polynomial. The degree of a polynomial with one variable is the value of the greatest exponent of the variable that appears in any term. The polynomial $3x^2 + 5x - 6$ has degree 2, since the greatest exponent of x is 2.

26. $-4x^2 + 5x + 1$

27. $3x^3 + 2x^2 - 3x$

28. $2x + 1$

29. $x^5 + 2x^3 - 3x + 1$

30. **Reasoning** What is the degree of a constant expression like 5? Explain.

31. **Writing in Math** Explain how knowing the meaning of the prefix *poly* can help you understand the meanings of words with the prefix *poly*.

C Challenge

Simplify each polynomial.

32. $-3x^2 + 2x - 9xy + 1 - 4y^2$

33. $11x^2 + 2x + 4x^2 + 15x - 3$

34. $-5y^2 - 1 - 8y^2 - 29y - 4$

35. $5a^2 + 2ab + 7 + 21ab + 3$

36. **Stretch Your Thinking** What fraction in simplest form is $\frac{4}{9}$ of its reciprocal?



Test Prep

Multiple Choice

37. Simplify the polynomial $n + 5 + 2n$.

- A. $8n$ B. $3n + 5$ C. $7n$ D. $7n^2$

38. Which of the following statements is NOT true about the polynomial $x + 3x + 5x$?

- F. The polynomial has 3 terms.
 G. The polynomial has no constant.
 H. The polynomial is simplified.
 I. The polynomial can be simplified to $9x$.

39. Simplify the polynomial $2s^2 - 2s - 3s^2 + 4 + s - 4$.

- A. $s^2 + 3s$ B. $5s^2 + 3s + 8$ C. $-s^2 - s + 8$ D. $-s^2 - s$

Short Response

40. a. The polynomial $-16t^2 + 100t + 40t$ gives the height, in feet, reached by a display of fireworks in t seconds. Simplify the polynomial.
 b. Find the height of the fireworks 3 seconds after launch.



Take It to the NET

Online lesson quiz at www.PHSchool.com
 Web Code: aca-1208

Mixed Review

Lesson 12-6

Graph each quadratic function. Use integers from -3 to 3 for inputs.

41. $y = 3t^2 - t + 4$

42. $y = -7m^2 + 2m - 10$

43. $y = x^2 - 4x + 6$

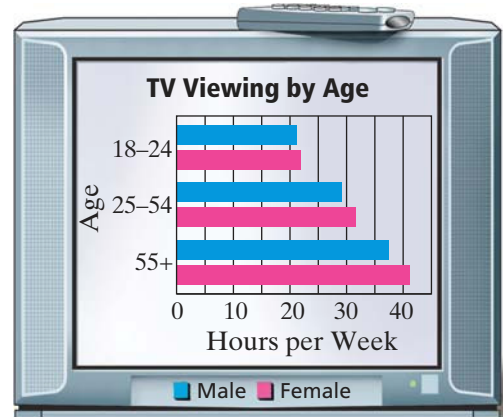
44. $y = -5x^2 - 9$

Lesson 10-1



Television Use the graph at the right.

45. About how many hours per week do women ages 18–24 watch television?
46. Which age group shows the least difference between men and women? Which shows the greatest difference?



SOURCE: *The World Almanac*