PRACTICE & PROBLEM SOLVING

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Practice Tutorial

Additional Exercises Available Online

UNDERSTAND

13. Reason How is it possible that the sum of two quadratic trinomials is a linear binomial?

14. Error Analysis Describe and correct the error a student made when naming the polynomial.

$-2x^3 + 5x^4 - 3x$ is a cubic trinomial. ✗

15. Error Analysis Describe and correct the error a student made when subtracting the polynomials.

$(-5x^2 + 2x - 3) - (3x^2 - 2x - 6)$
$-5x^2 + 2x - 3 - 3x^2 - 2x - 6$
$-8x^2 - 9$ ✗

16. Reason What is the missing term in the equation?

a. $(\_\_\_ + 7) + (2x - 6) = -4x + 1$

b. $(a^2 + \_\_\_ + 1) - (\_\_\_ + 5a + \_\_\_) = 4a^2 - 2a + 7$

17. Higher Order Thinking Describe each statement as *always, sometimes,* or *never* true.

a. A linear binomial has a degree of 0.

b. A trinomial has a degree of 2.

c. A constant has a degree of 1.

d. A cubic monomial has a degree of 3.

18. Make Sense and Persevere Consider the set of linear binomials $ax + b$, where a and b are positive integers, $a > 0$ and $b > 0$.

a. Does the set have closure for addition? Explain.

b. Does the set have closure for subtraction? Explain.

PRACTICE

Find the degree of each monomial. SEE EXAMPLE 1

19. $\frac{x}{4}$

20. $-7xy$

21. 21

22. $4x^2y$

Name each polynomial based on its degree and number of terms. SEE EXAMPLE 1

23. $17yx^2 + xy - 5$

24. $5x^3 + 2x - 8$

25. $100x^2 + 3$

26. $-9x^4 + 8x^3 - 7x + 1$

Simplify each expression. Write the answer in standard form. SEE EXAMPLES 2 AND 3

27. $3x + 2x^2 - 4x + 3x^2 - 5x$

28. $5 + 8y^2 - 12y^2 + 3y$

29. $3z - 7z^2 - 5z + 5z^2 + 2z^2$

30. $7 - 2x + 3 + 5x + 4x^2$

Add or subtract. Write each answer in standard form. SEE EXAMPLES 4 AND 5

31. $(3b - 8) + (7b + 4)$

32. $(2x^2 - 7x^3 + 8x) + (-8x^3 - 3x^2 + 4)$

33. $(5y^2 - 2y + 1) - (y^2 + y + 3)$

34. $(-7a^4 - a + 4a^2) - (-8a^2 + a - 7a^4)$

35. $(4m^2 - 2m + 4) + (2m^2 + 2m - 5)$

Write an expression to represent each situation. SEE EXAMPLE 6

36. Find the perimeter of the rectangle.

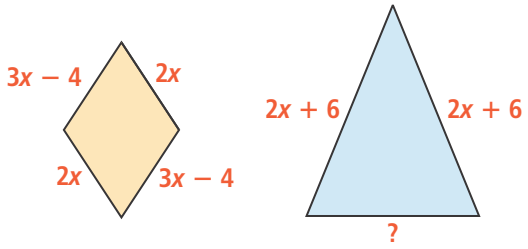
37. A cube has square sides with area $x^2 + 24x + 144$. What expression represents the surface area of the cube?

38. A rectangle has a length of $5x + 2$ in. and a width of $4x + 6$ in. What is the perimeter of the rectangle?

PRACTICE & PROBLEM SOLVING

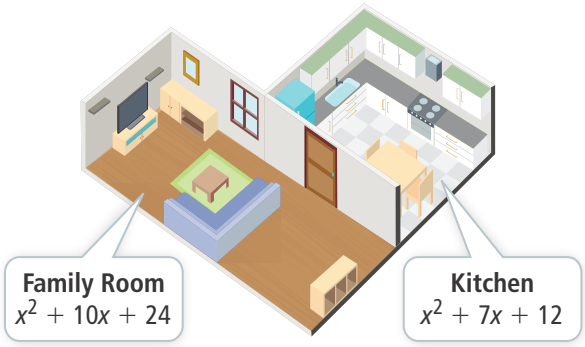
APPLY

39. **Mathematical Connections** The perimeters of the two figures are equal.



What expression represents the missing side length?

40. **Make Sense and Persevere** The owners of a house want to knock down the wall between the kitchen and family room.



What expression represents the area of the new combined open space?

41. **Reason** Polynomial A has degree 2; Polynomial B has degree 4. What can you determine about the name and degree of the sum of the polynomials and the difference of the polynomials if

a. Polynomial A is a binomial and Polynomial B is a monomial?

b. Both Polynomial A and Polynomial B are binomials?

42. **Model With Mathematics** A large indoor market is set up with 4 rows of booths. There are large booths with an area of x^2 sq. units, medium booths with an area of x sq. units, and small booths with an area of 1 sq. unit. In the marketplace, two of the rows contain 7 large booths, 6 medium booths, and 5 small booths each. The other two rows each contain 3 large booths, 5 medium booths, and 10 small booths. What is the total area of the booths in the marketplace?

ASSESSMENT PRACTICE

43. Which expression is equivalent to $(x^2 + 3x - 5) - (4x^2 + 3x - 6)$?

Ⓐ $5x^2 + 6x - 11$

Ⓑ $-3x^4 + 6x^2 + 1$

Ⓒ $-3x^2 + 1$

Ⓓ $-3x^2 + 6x - 11$

44. **SAT/ACT** What is the sum of $-2x^2 + 3x - 4$ and $3x^2 - 4x + 6$?

Ⓐ $x^4 - x^2 + 2$

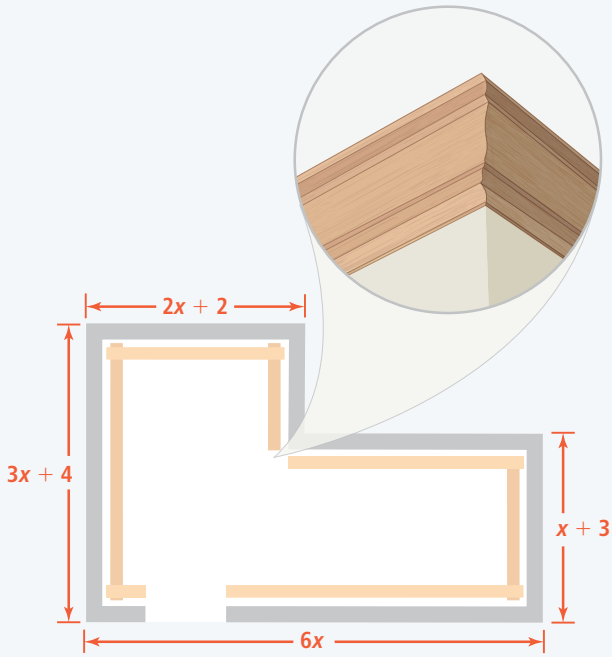
Ⓑ $5x^4 + 7x^2 + 10$

Ⓒ 2

Ⓓ $x^2 - x + 2$

Ⓔ $2x^6$

45. **Performance Task** A room has the dimensions shown below. Molding was installed around the edge of the ceiling.



Part A Write an expression to represent the amount of molding needed.

Part B Sam used 80 feet of molding. What is the measurement of each edge of the ceiling?