Cumulative Practice

Does the table represent a function? Explain. (1.7)

1.

Input	1	2	3	4
Output	5	8	11	14

2.

Input	5	3	5	2
Output	8	7	4	3

3.

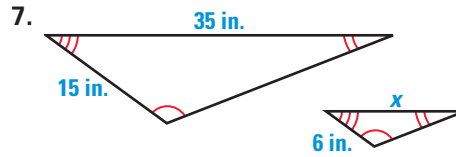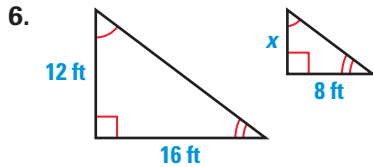| Input	3	6	9	12
Output	5	8	5	8

Find the probability of choosing a green marble from a bag of green and yellow marbles. Then find the odds of choosing a green marble. (2.8)

4. Number of green marbles: 30
Total number of marbles: 84

5. Number of green marbles: 16
Total number of marbles: 72

In Exercises 6 and 7, the two triangles are similar. Write an equation and solve it to find the length of the side marked *x*. (3.2)

6.

7.

Find the value of *y* so that the line passing through the two points has the given slope. (4.4)

8. $(2, y), (11, 8), m = \frac{1}{3}$

9. $(7, 3), (6, y), m = -1$

10. $(5, -10), (8, y), m = 4$

11. $(5, y), (-5, 7), m = -\frac{1}{2}$

12. $(0, -12), (3, y), m = 5$

13. $(-4, y), (3, -8), m = -2$

Write the equation in standard form with integer coefficients. (5.6)

14. $3x - 5y + 6 = 0$

15. $6y = 2x + 4$

16. $-2x + 7y - 15 = 0$

Find the first, second, and third quartiles of the data. (6.7)

17. 8, 5, 7, 5, 6, 9, 8, 5, 7

18. 10, 12, 7, 30, 25, 8, 6, 10, 5, 8

19. 4, 4, 8, 2, 10, 8, 4, 6, 2, 10, 4

Solve the linear system. (7.1–7.4)

20. $x + y = 8$
$2x + y = 10$

21. $\frac{1}{4}x - y = 7$
$x + 4y = 0$

22. $-2x + 20y = 10$
$x - 5y = -5$

23. $3.2x + 1.1y = -19.3$
$-32x + 4y = 148$

24. $\frac{1}{10}x - \frac{3}{2}y = -1$
$-10x + 3y = 2$

25. $1.4x + 2.1y = 1.75$
$2.8x - 4.2y = 34.58$

Sketch the graph of the system of linear inequalities. (7.6)

26. $x \geq 0$
$y \geq 0$
$x < 5$
$y < \frac{5}{2}$

27. $x > 2$
$x - y \leq 2$
$\frac{1}{2}x + y \leq 3$

28. $3x + 5y \geq 15$
$x - 2y < 10$
$x > 1$

29. $-\frac{1}{4}x + y \leq 2$
$-4x + y \geq -4$
$2x + y \geq -4$

Simplify the expression. (8.1–8.3)

30. $\left(\dfrac{1}{x^2}\right)^7$
31. $\dfrac{x^8}{x^{10}}$
32. $\dfrac{4}{(2x)^{-3}}$
33. $\left(\dfrac{-8x^3}{4xy^5}\right)^2$

34. $5x \cdot \left(x \cdot x^{-4}\right)^2$
35. $\left(6a^3\right)^2\left(\dfrac{1}{2}a^3\right)^2$
36. $\left(r^2st^5\right)^0\left(s^4t^2\right)^3$
37. $\dfrac{6x^4y^4}{3xy} \cdot \dfrac{5x^2y^3}{2y^2}$

Evaluate the expression. Write the result in scientific notation and in decimal form. (8.4)

38. $\left(5 \times 10^{-2}\right) \cdot \left(3 \times 10^4\right)$
39. $\left(6 \times 10^{-4}\right) \cdot \left(7 \times 10^{-5}\right)$
40. $\left(20 \times 10^{-4}\right) \div \left(2.5 \times 10^{-8}\right)$

41. $\left(7 \times 10^3\right)^{-3}$
42. $\left(8.8 \times 10^{-1}\right) \div \left(11 \times 10^{-1}\right)$
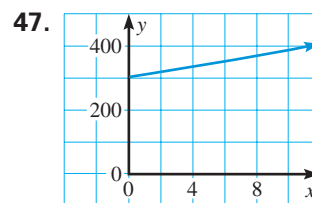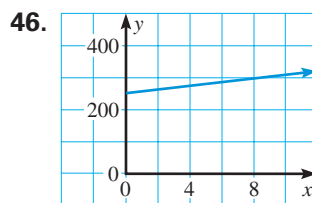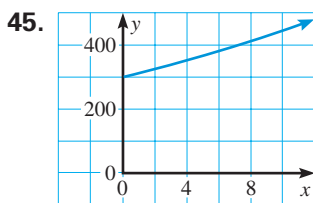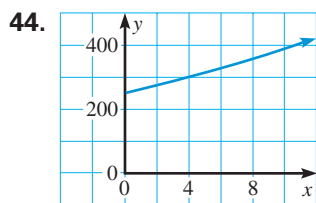**43.** $\left(2.8 \times 10^{-2}\right)^3$

Match the graph with its description. (8.5)

A. Deposit: $300, Annual rate: 2.5%   **B.** Deposit: $300, Annual rate: 4%   **C.** Deposit: $250, Annual rate: 2%   **D.** Deposit: $250, Annual rate: 4.5%

44.   **45.**   **46.**   **47.**

Simplify the expression. (9.2)

48. $\sqrt{48}$
49. $\sqrt{\dfrac{28}{36}}$
50. $\dfrac{1}{4}\sqrt{84}$
51. $\dfrac{\sqrt{112}}{\sqrt{49}}$

52. $\sqrt{12} \cdot \sqrt{63}$
53. $\sqrt{9} \cdot \dfrac{\sqrt{18}}{\sqrt{54}}$
54. $\dfrac{-2\sqrt{98}}{\sqrt{7}}$
55. $\dfrac{\sqrt{33} \cdot \sqrt{75}}{\sqrt{11}}$

Sketch the graph of the function or the inequality. (9.3 and 9.7)

56. $y = -3x^2 + 12x - 7$
57. $y \geq 5x^2 + 20x + 13$
58. $y \leq \dfrac{1}{2}x^2 + 4x + 1$

Use the quadratic formula to solve the equation. (9.5)

59. $x^2 + 10x + 9 = 0$
60. $-x^2 + 5x - 6 = 0$
61. $3x^2 + 8x - 5 = 0$

62. $-2x^2 + 5x + 12 = 0$
63. $-\dfrac{1}{2}x^2 + 3x - \dfrac{5}{2} = 0$
64. $7x^2 + 12x - 2 = 0$

65. 🌐 **COMPOUND INTEREST** Your savings account earns 4.8% interest, compounded annually. Another bank in town is offering 5.1% interest, compounded annually. The balance in your account is $567. How much additional interest could you earn in 5 years by moving your account to the bank with the 5.1% interest? in 10 years? (8.5)

🌐 **SENDING UP FLARES In Exercises 69 and 70, a flare is fired straight up from ground level with an initial velocity of 100 feet per second.** (9.5)

66. How long will it take the flare to reach an altitude of 150 feet?

67. Will the flare reach an altitude of 180 feet? Explain.

68. **GEOMETRY** ▷ **CONNECTION** Is it possible for a rectangle with a perimeter of 52 centimeters to have an area of 148.75 square centimeters? Explain. (9.5–9.6)

$26 - x$

x