

Chapter 11

Cumulative Review

Solve the equation, if possible.

- $2x + 2(4x - 2) + 3x = x + 3(x - 8) + 4x$
- $2|2y - 2| - 2 = 2$

Solve the inequality, if possible.

- $|8h + 16| \leq -24$
- $10 \geq -3(x + 4) - 5$
- $|8x + 16| > -24$
- You sell magazine subscriptions and earn \$2 for every new subscriber you sign up. You also earn a \$30 weekly bonus regardless of how many magazine subscriptions you sell. If you want to earn at least \$98 this week, what is the minimum number of subscriptions you need to sell?
- Four times the quantity of a number x minus 8 is no more than 50. Write this sentence as an inequality.

Graph the linear equation or linear inequality.

- $y = 3x - 4$
- $4x - 2y > -10$
- $y - 4 = 3(x - 1)$

Write an equation of the line in point-slope form that passes through the given point and is perpendicular to the given line.

- $(-1, 5); y = x + 8$
- $(2, -4); y - 7 = \frac{1}{4}(x + 8)$
- $(-8, 0); 10x - 5y = 15$

Solve the system of linear equations by graphing, substitution, or elimination.

- $y = \frac{1}{5}x + 4$
 $y = 2x + 4$
- $2x + y = 19$
 $x - y = 8$
- $y = 5x - 7$
 $-3x - 2y = -12$

- The admission fee at a small fair is \$1.50 for children and \$4.00 for adults. On a certain day, 2200 people enter the fair and \$5050 is collected. How many children and how many adults attended?

Simplify the expression. Write your answer using only positive exponents.

- $\frac{(2x)^{-4}}{x^{-1}(x)}$
- $\frac{x^{-12}(x^4)}{2x^{-3}}$
- $\frac{2x^2y^4(4x^2y^4)(3x)}{3x^{-3}y^2}$

**Chapter
11****Cumulative Review (continued)**

Solve the equation. Check your solution.

21. $7^{5x-11} = 7^4$

22. $5^{2x+6} = 5^{x+10}$

23. $2^{7x} = 4^{x+10}$

Find the sum or the difference.

24. $(g + 17) + (-g - 42)$

25. $(2y - 7) - (-8y - 15)$

Find the product.

26. $(x - 1)(x - 5)$

27. $(4x - 3y)^2$

Factor the polynomial.

28. $m^2 + 4m - 21$

29. $z^2 - 15z + 44$

30. $4w^2 + 44w + 96$

31. A coin is dropped from the top of a building. The distance d (in feet) between the coin and the ground t seconds after it is dropped is given by $d = -16t^2 + 144$. How long after the coin is dropped does it hit the ground?

Solve the equation.

32. $z^2 - 100 = 0$

33. $y^2 + 27y + 50 = 0$

Factor the polynomial completely.

34. $6x^3 - 15x^2 + 2x - 5$

35. $y^3 + y^2 + y + 1$

Graph the function. Compare the graph to the graph of $f(x) = x^2$.

36. $h(x) = \frac{1}{3}x^2$

37. $p(x) = -7x^2 + 1$

38. $q(x) = x^2 - 2$

39. The function $f(t) = -16t^2 + s_0$ represents the approximate height (in feet) of an object falling t seconds after it is dropped from an initial height s_0 (in feet). A ball is dropped from a height of 784 feet.

- After how many seconds does the ball hit the ground?
- Suppose the initial height is adjusted by k feet. How will this affect part (a)?

Tell whether the function has a minimum value or a maximum value. Then find the value.

40. $f(x) = -4x^2 - 24x + 15$

41. $f(x) = 6x^2 + 36x - 20$

Chapter 11

Cumulative Review (continued)

Find the vertex and the axis of symmetry of the graph of the function.

42. $f(x) = 10(x - 3)^2$

43. $g(x) = 0.125x^2$

44. $g(x) = -8(x + 6)^2 + 2$

Graph the function. Compare the graph to the graph of $f(x) = x^2$.

45. $f(x) = \frac{1}{3}(x + 6)^2$

46. $f(x) = 2(x - 1)^2 - 7$

Simplify the expression.

47. $\sqrt[3]{\frac{128x^{10}}{8y^3}}$

48. $\frac{5}{-5 - 3\sqrt{3}}$

49. $-2\sqrt{20} + 2\sqrt{18} - 2\sqrt{5}$

Solve the equation by graphing.

50. $x^2 - 2x - 3 = 0$

51. $x^2 + 10 = 7x$

Solve the equation using square roots.

52. $7x^2 = 112$

53. $-x^2 = -49$

54. $4x^2 + 17 = 53$

Solve the equation by completing the square.

55. $x^2 - 8x + 21 = 6$

56. $y^2 + 19y + 66 = 6$

57. You want to enclose a rectangular vegetable garden with 100 feet of fence, with one side of the garden being your garage. How should you lay out the fence to maximize the area of the garden?

Solve the equation using the Quadratic Formula. ~~Round your solutions to the nearest tenth, if necessary.~~ Keep solutions in radicals.

58. $2x^2 - 4x - 3 = 0$

59. $y^2 - 4y - 6 = 2$

Solve the system of equations by graphing, elimination, or substitution, if possible.

60. $y = x^2 + 3x - 5$
 $y = x + 3$

61. $y = x^2 + 1$
 $y - x = 1$

62. $y = x^2 - x - 12$
 $y = x + 3$

63. The area of a rectangular pool cover at a local park is 360 square meters. The width of the pool cover is 2 meters shorter than the length. Find the dimensions of the pool cover in meters.

Chapter 11

Cumulative Review (continued)

Describe the domain of the function.

64. $y = \frac{2}{3}\sqrt{x}$

65. $y = \sqrt{x - 4}$

66. $f(x) = \frac{3}{11}\sqrt{-2x + 4}$

Graph the function. Describe the range.

67. $f(x) = \sqrt{x} - 4$

68. $f(x) = \sqrt{x + 7}$

69. $h(x) = \frac{2}{7}\sqrt{x}$

Graph the function. Compare the graph to the graph of $f(x) = \sqrt[3]{x}$.

70. $d(x) = 0.5\sqrt[3]{x - 3} + 7$

71. $c(x) = 3\sqrt[3]{x + 2} - 1$

Solve the equation. Check your solution.

72. $\sqrt{w + 3} - 5 = 10$

73. $7\sqrt{r + 9} = 35$

74. $\sqrt{5x + 10} = \sqrt{3x + 18}$

Find the inverse of the given function.

75. $f(x) = \frac{3}{5}x - 1$

76. $f(x) = 7x - 8$

Find the mean, median, and mode of the data set. Which measure of center best represents the data? Explain.

77. 13, 18, 13, 14, 13, 16, 14, 21, 13

78. 23, 29, 20, 32, 23, 21, 33, 25

79. Make a box-and-whisker plot that represents the data.

Miles traveled to work 14, 6, 3, 2, 4, 15, 11, 8, 1, 7, 2, 1, 3, 4, 10, 22, 20

80. Describe the shape of the distribution of the data. Explain your reasoning.

Stem	Leaf
1	1 1 8
2	1 3 5 5 8
3	2 6 7

Tell whether the data are *qualitative* or *quantitative*.

81. everyone's favorite color in your class

82. jersey numbers on a football team

83. It is the end of the school year in math class, and your grades for the four quarters are as follows: 87, 71, 95, and 92. Your final test counts as a fifth of your final grade, as do your grades for the four quarters. What grade do you need on your final test in order to get an 85 for the year?