

Evaluate each of the following expressions.

1. $8 \cdot 6 - 9 \div 3$

2. $\frac{(2+3)^2 + |-2|}{-3(1-4)}$

3. $\frac{4(16-5)}{5+3 \cdot 2}$

4. $-35 + 18 + 17$

5. $-\frac{1}{2} - \left(-\frac{7}{10}\right)$

6. $(-4)(5)(-12)$

7. $\frac{-19}{0}$

8. $-\frac{5}{8} \div \frac{15}{16}$

Write the following products using exponents.

9. $x \cdot x \cdot x \cdot x$

10. $5 \cdot a \cdot a \cdot b \cdot b \cdot b$

Classify each of the following as an expression or as an equation.

11. $x^2 + 2x + 1$

12. $x^2 + 2x + 1 = 0$

Evaluate each of the following expressions for $a = -2$, $b = -6$, and $c = -3$.

13. $b^2 - 4ac$

14. $4a^2 - 3b^2$

15. $(a + b)^2 - |b + c|$

Simplify each of the following expressions.

16. 13^0

17. -13^0

18. x^{-4}

19. $-x^{-4}$

Solve each of the following equations.

20. $16 + z = 24$

21. $-125 = \frac{y}{-3}$

22. $5x - 8 = 12$

23. $\frac{d + 4}{15} = 2$

24. $8(t - 1) = 5(t + 2)$

25. $\frac{25 - 4q}{7} = 3q$

26. $-5 + \frac{x}{3} = \frac{3}{2}$

27. $\frac{-5}{2} + \frac{c}{4} = \frac{2}{5}$

28. $\frac{1}{3}f - 2 = \frac{4}{9} - f$

Solve each of the following inequalities.

29. $6 + x \geq 4$

30. $5x - 14 < 4x$

31. $-2z + 10 \leq 18$

32. $\frac{t}{9} - 5 \geq 6$

33. $-4(x + 9) < 9x + 3$

34. $\frac{1}{2} + \frac{a}{4} < \frac{7}{8}$

35. $1 < x - 4 < 10$

36. Graph the solution to problem #33 above.

37. Write your solution to problem #29 above in interval notation.

Simplify each of the following expressions.

38. $(2x - 3y)^2$

39. $(a + 5b)(a - 5b)$

40. $(2x + 3y)(2x - 3y)$

41. $(y + 9)^2$

42. $(t - 5)(2t + 3)$

43. $(c - d)(r + s)$

44. $3y^3(3y^2 - 2y - 8)$

45. $(x - y)(x^2 + xy + y^2)$

46. $(2a - b)(a^2 + 5ab - 7b^2)$

47. $(-4a + 3b) + (5a - 3b)$

48. $(-4a + 3b) - (5a - 3b)$

49. $(10x^2 - 9x + 8) - (9x^2 + 8x - 7)$

Simplify each of the following expressions.

50. $(a^2b^3)(a^3b^2)$

51. $\frac{y^7}{y^4}$

52. $\frac{y^4}{y^7}$

53. $(3z)^4$

54. $(2^2)^5$

55. $\left(\frac{4c}{5d}\right)^3$

56. $\left(\frac{-3x^2y^5}{x^2y^6}\right)^3$

57. $\left(\frac{8}{9}\right)^{-1}$

58. $\frac{6x^{-2}y^{-3}}{3x^2y^{-3}}$

59. $\left(\frac{a^{-1}b^4c^3}{a^2b^5c^{-1}}\right)^2$

Write each of the following numbers in scientific notation.

60. 350,000

61. 0.00075

Write each of the following numbers in standard notation.

62. 8.92×10^6

63. 2.9×10^{-2}

64. $(2.5 \times 10^{-3})(1.2 \times 10^4)$

Simplify each of the following expressions.

65. $\frac{36x + 54y}{9}$

66. $17\left(-\frac{5}{17}w\right)$

67. $\frac{-40a^2b^2 - 25a^2b - 15ab^2}{-10ab}$

68. $7t(-4t)(2)$

69. $-5(p - 3) + 4(3 - p) + p$

Solve each of the following formulas for the given variable.

70. $A = \frac{1}{2}bh$ for h

71. $V = lwh$ for l

72. $P = 2l + 2w$ for w

Use a formula given above to solve each of the following problems. Be sure to include the proper units in your answers.

73. Find the volume of a rectangular solid if $l = 4$ ft, $w = 3$ ft, and $h = 2$ ft.

74. Find the perimeter of a rectangle if $l = 100$ yd and $w = 40$ yd.

75. Find the area of one of the triangles obtained by cutting the rectangle described in the problem above in half diagonally.

Translate each of the following statements into an algebraic expression or into an equation.

76. The square of the quantity x less than 23

77. The absolute value of the sum of b and 3.

78. 45 is 20% of some number

Solve each of the following problems.

79. The equation from problem #78 above.

80. What number is 2.3% of 112?

81. What percent of 628 is 220?

82. Suppose two angles are supplementary and one measures $(3x + 15)^\circ$ while the other measures $(14x - 5)^\circ$. Determine the measure of the larger angle.

83. Suppose two angles are complementary and one measures $(3x - 6)^\circ$ while the other measures $(9x)^\circ$. Determine the measure of the smaller angle.

84. Suppose two vertical angles measure $(6x - 2)^\circ$ and $(7x - 9)^\circ$. Write an equation and solve for x .

85. Suppose an investment of \$8,000 earned \$480 in simple interest in one year. Determine the interest rate for the investment. Write your answer as a percentage.

86. Suppose you drove your car 450 miles in 6 hours. Determine your average rate of speed for the trip.

Determine which property of the real numbers is exhibited by each of the following equations.

87. $15 + n = n + 15$

88. $(2.3 + x) + (-4) = 2.3 + (x + (-4))$

89. $a\left(\frac{1}{a}\right) = 1$

90. $5(x + 2y) = 5x + 10y$

91. Determine which numbers in the following set are real numbers.

$\{-1.5, \sqrt{2}, 13, \frac{4}{7}, 0, \pi, \overline{0.571428}\}$

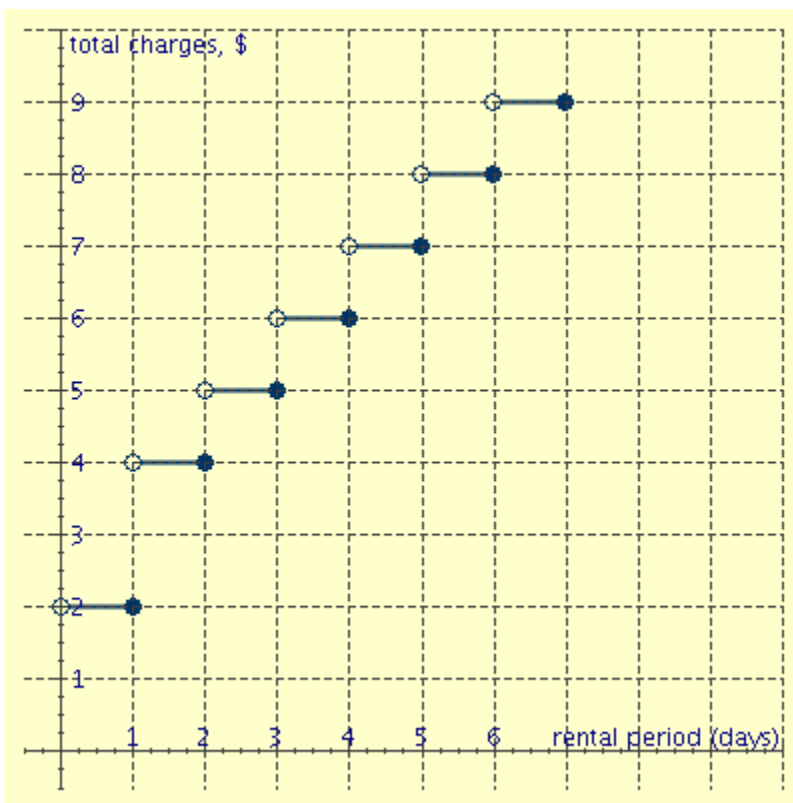
92. Suppose a board $\frac{1}{2}$ inch thick is nailed to a board $\frac{3}{4}$ inch thick. What is the total thickness of the two boards nailed together?

93. Suppose Tiger Woods shoots six under par in his first round of golf and eight under par in his second round. What signed number represents his score in relation to par after two rounds?

94. If the mass of one proton is approximately 1.7×10^{-24} g, find the mass of one billion protons.

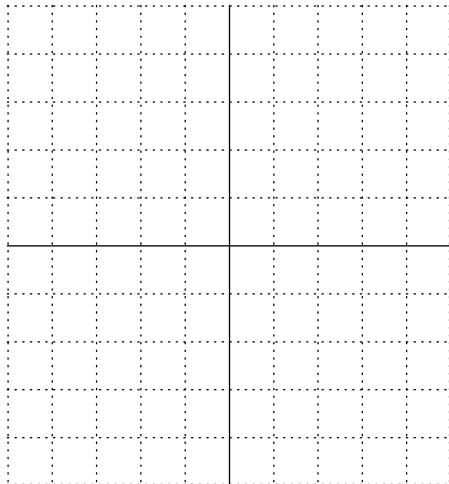
95. Suppose you bought a shirt for \$29.99 plus sales tax of 6%. What is the total cost of the shirt?

96. Use the following graph to determine the cost of a 3-day video rental.

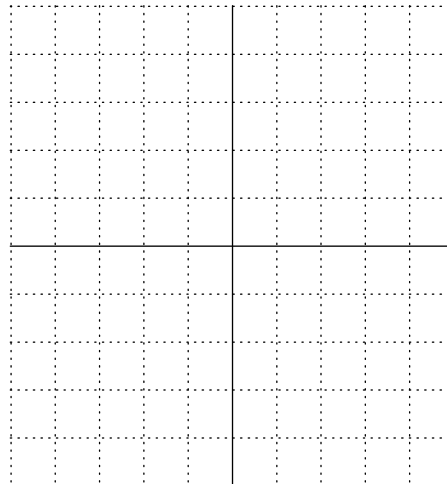


Graph each of the following linear equations. Be sure to plot the intercept(s) accurately.

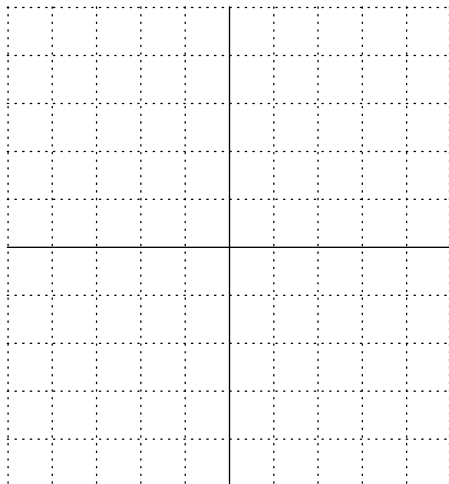
97. $x = -3$



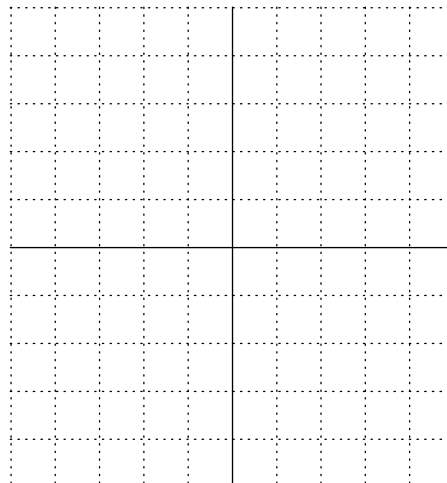
98. $2x + 3y = 12$



99. $y = x - 2$

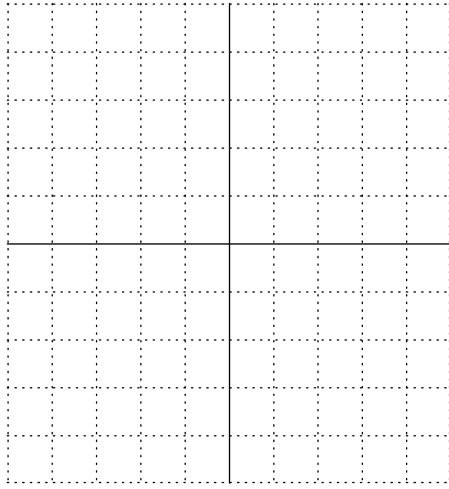


100. $y = 4$



101. Graph each of the following points.

$A(0, 3)$ $B(-3, 0)$ $C(2, 5)$ $D(-2, -5)$



102. State the ordered pairs which represent five points that lie on the following graph.

