Rising Algebra Summer Packet

Simplify the expression.

1. $-w + 9 + 4w - 17$
2. $15 + 12a - a - 24$
3. $5(x - 9) - 2x$
4. $-3(n + 1) + 10$

Write the verbal sentence as an equation. Then tell whether 16 is a solution.

5. The sum of 13 and a number is 29.

6. The difference of a number and 2 is 18.

7. The product of -3 and a number is 48.

Solve the equation.

8. $a - 9 = 14$
9. $-2 = h + 10$
10. $-3x = 36$
11. $\frac{c}{5} = 17$
12. $z + 2.8 = -3.7$
13. $\frac{n}{-1.1} = 3.96$

14. The total length of the parking lot shown is 13.5 meters. Each of the parking spaces is equal in length. Find the width of one parking space.

$\vdash\!\!-\!\!-\!\!-\ 13.5 \text{ m}\ -\!\!-\!\!-\!\!\dashv$

Solve the equation.

15. $4d + 9 = -35$
16. $15 - 3h = 12$
17. $\frac{g}{4} + 6 = -2$
18. $-5x + 6 - x = 18$
19. $9(14 - t) = -117$
20. $7m + 9 = -m - 31$

21. You are working two jobs to save money for a vacation. You earn $6 per hour babysitting and $8.50 per hour mowing lawns. Next week, you are scheduled to work 15 hours babysitting. How many hours must you work mowing lawns so that you can earn a total of $175 next week?

22. Solve $6x + 2y = 8$ for y.

23. Solve $V = \dfrac{1}{3} Bh$ for B.

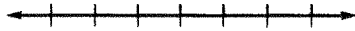**Solve the inequality. Graph your solution on the number line.**
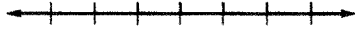
24. $9 + z \le 22$
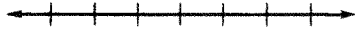
25. $a - 14 \ge 27$
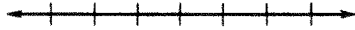
26. $\dfrac{r}{2} > 25$

27. $-6n < -72$

28. $5(10 + k) < 40$

Write the verbal sentence as an inequality. Then solve the inequality.

29. Fifteen is less than or equal to a number minus 10.

30. The quotient of a number and 7 is greater than or equal to 20.

31. Four is less than 2 times the difference of a number and 6.

32. Nine times the sum of a number and 1 is greater than -18.

33. A truck driver is loading a truck with crates of oranges and bananas. The truck can haul no more than 3500 pounds. Each crate of oranges weighs 9 pounds and each crate of bananas weighs 14 pounds. The truck driver has received an order for 205 crates of bananas. What is the largest number of crates of oranges that the truck driver can haul without going over the limit?

For the given expression, identify the terms, like terms, coefficients, and constant terms.

34. $-8 + 2x - 8x + 9$

35. $-n + 4 - 10 + 3n$

Simplify the expression.

36. $4t - 6(2t - 1)$

37. $5(w - 2) - 8w$

38. $2p + 9 - (p + 4)$

Solve the equation.

39. $z + 4 = 12$

40. $a - 19 = -25$

41. $-9x = -54$

42. $\dfrac{d}{-1} = 5$

43. $10.5 + c = 9.2$

44. $1.4f = -4.2$

45. You deposit a check into your savings account. Before the deposit, your balance was \$142.35. After the deposit, your balance is \$238.12. How much was the deposit?

Solve the equation.

46. $3b + 5 = 14$

47. $10 - 6h = -20$

48. $\dfrac{x}{8} - 12 = -10$

49. $-7(1 - v) = 49$

50. $-2y - 20 = 10 + 8y$

51. $4t + 4 = 6(12 - 5t)$

52. Your long-distance phone company charges \$.39 per long-distance call plus an additional \$.05 per minute. Last month, you made 22 long-distance calls and your bill was \$14.08. How many minutes did you use?

53. Solve $18x + 6y = 30$ for y.

54. Solve $V = \dfrac{1}{3}Bh$ for h.

Solve the inequality.

55. $u + 15 < -12$

56. $8 - c \geq 6$

57. $\dfrac{m}{24} \leq 3$

58. $-5t - 7 > -22$

59. $9(4 - n) \leq -18$

60. $y - 2 > 16 - 5y$

61. You are throwing a surprise birthday party for your friend. You want to rent a private room at a restaurant. The restaurant charges a \$25 rental fee and \$5.75 per person for food and drinks. You can spend no more than \$94 for the event. What is the greatest number of people that can attend the party?

Evaluate the expression when $x = 6$ and $y = 9$.

62. $30 - 3(9y - x^2)$

63. $\dfrac{17 + x^2 + y - 2}{2x}$

Find the sum, difference, product, or quotient.

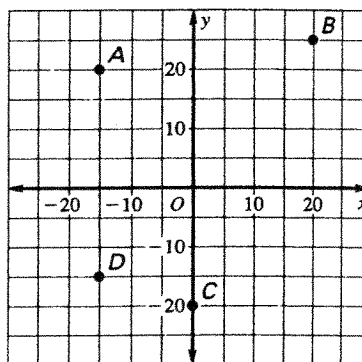64. $-5 + 8$ 65. $-11 - (-16)$ 66. $3(-5)$ 67. $\dfrac{-12}{-6}$

Give the coordinates of the point.

68. A

69. B

70. C

71. D

Identify the property that the statement illustrates.

72. $10(8 \cdot 13) = (10 \cdot 8)13$

73. $-5 + 9 = 9 + (-5)$

74. $-3 \cdot 1 = -3$

75. $-18 + 0 = -18$

Evaluate the expression using the distributive property and mental math.

76. $15(1.02)$

77. $7(3.98)$

78. $-12(7.05)$

Solve the equation.

79. $7x + 4 = 39$

80. $12y - 48 - (17 + 9y) = 3y - 12$

81. You are planning a movie night with your friends. Movies are $2.50 each to rent and popcorn is $1.75 per bag. You have $22. How many movies can you rent if you buy 4 bags of popcorn?

Solve the equation for y.

82. $8x + 2y = 24$

83. $25 = y + 3x$

Solve the inequality.

84. $x - 8 < -11$ 85. $13t - 19 \le 20$ 86. $-\dfrac{y}{7} + 13 < 5$

Simplify the expression. Write your answer using exponents.

87. $\dfrac{30m^5}{35m^4}$ 88. $15x \cdot 9x^7$ 89. $16k^7 \cdot 3k^{14}$ 90. $\dfrac{9y^{21}}{12y^{15}}$

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

91. $4t^9 \times 9t^{-11}$ 92. $\dfrac{18x^{10}}{27x^{17}}$

Order the numbers from least to greatest.

93. $0.0000057;\ 5.83 \times 10^{-7};\ 5.75 \times 10^{-6}$

94. $1.02 \times 10^5;\ 1.07 \times 10^4;\ 10{,}703$

Find the product. Write your answer in scientific notation.

95. $(1.8 \times 10^4)(6.54 \times 10^{-9})$ 96. $(2.91 \times 10^{-5})(5.2 \times 10^{-10})$

Solve the inequality by first clearing the fractions.

97. $\dfrac{7}{9}x - \dfrac{2}{3} < \dfrac{11}{15}$ 98. $-\dfrac{5}{8}k + 12 \ge -\dfrac{7}{18}$ 99. $7m + \dfrac{3}{16} \le \dfrac{3}{5}$
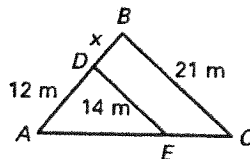
Write the equivalent rate.

100. $\dfrac{2\ \text{lb}}{\$1} = \dfrac{?\ \text{oz}}{\$1}$ 101. $\dfrac{60\ \text{mi}}{1\ \text{h}} = \dfrac{?\ \text{ft}}{1\ \text{sec}}$ 102. $\dfrac{6\ \text{in.}}{1\ \text{day}} = \dfrac{?\ \text{ft}}{1\ \text{wk}}$

103. Given $\triangle ABC \sim \triangle ADE$, find DB.

Tell whether the relation is a function.

104. $(18, -5), (2, 8), (0, -5), (9, 9)$

105. $(5, -6), (8, -4), (0, 11), (5, 4)$

106. Find the equation of the line perpendicular to the line $6y - 18x = 12$ that passes through the point $(0, -5)$.

Write a linear function that satisfies the given conditions.

107. $f(0) = -8, f(2) = -14$ 108. $g(0) = 19, g(3) = 4$

Use a number line to order the numbers from least to greatest.

109. $2\frac{7}{8}, 2\sqrt{2}, 2.6, \sqrt{7}, \frac{21}{8}$ 110. $3\sqrt{2}, 4.85, \frac{19}{4}, 4\frac{4}{5}$

Evaluate the expression when $x = 2$ and $y = 12$.

111. $2x + 10$ 112. $3y - 8x$ 113. $(x + 3)^3$ 114. $\frac{y^2 + 1}{5}$

Find the sum, difference, product, or quotient.

115. $18 + (-3)$ 116. $-11 - 4$ 117. $-15(20)$ 118. $\frac{-104}{-4}$
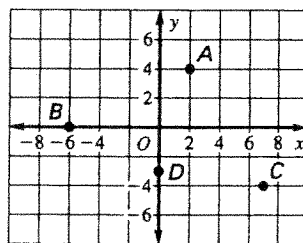
Give the coordinates of the point in the coordinate plane shown.

119. A

120. B

121. C

122. D

Simplify the expression.

123. $7(x - 4) + 3x$ 124. $-5(y - 16) - 32$ 125. $r - 15(2r - 3)$

Solve the equation.

126. $p + 9 = -4$ 127. $-3.2 + y = 5.1$

128. $3x - 8 = -17$ 129. $4(a + 3) = -16$

130. You are stocking up on school supplies. You bought pencils for $.90 each and pens for $1.20 each. How many pens did you buy if you bought 6 pencils and spent a total of $9?

Solve the equation for y.

131. $2x + y = 19$ 132. $15 = y - 4x$ 133. $x - 4y = 16$

Write the expression using only positive exponents.

134. $2y^{-5}$ 135. $p^4 q^{-9}$ 136. $-2a^{-1}b^6$

137. The average distance from the sun to the planet Neptune is approximately 4.497×10^9 kilometers. Write this number in standard form.

Solve the equation or inequality.

138. $\dfrac{5}{6w} = -\dfrac{9}{10}$ 139. $-\dfrac{3}{2}x + \dfrac{11}{4} = -\dfrac{31}{4}$ 140. $\dfrac{5}{7} + \dfrac{1}{3}y < \dfrac{71}{21}$

Solve the proportion.

141. $\dfrac{5}{3} = \dfrac{x}{33}$ 142. $\dfrac{t}{5} = \dfrac{26}{65}$ 143. $\dfrac{6}{w} = \dfrac{15}{25}$ 144. $\dfrac{48}{9} = \dfrac{64}{z}$

Find the x- and y-intercepts of the graph of the equation.

145. $y - 4x = 12$ 146. $9y + 3x = 54$ 147. $20x - 5y = 10$

Find the slope of the line through the given points. Then find the slope of a line perpendicular to the line with the given points.

148. $(0, 3), (-4, -11)$ 149. $(-2, 6), (8, 2)$ 150. $(-5, -5), (-1, 3)$

Write an equation of the line with the given slope and y-intercept.

151. slope $= -1$; y-intercept $= 4$

152. slope $= \dfrac{2}{3}$; y-intercept $= -5$

Write a linear function that satisfies the given conditions.

153. $f(0) = 9, f(2) = 6$ 154. $g(0) = -1, g(-3) = -10$

155. You have $32 to buy T-shirts and socks. T-shirts cost $8 each and socks cost $4 per pair. Write an inequality describing the possible numbers of T-shirts and pairs of socks that you can buy. Let x be the number of T-shirts and y be the number of pairs of socks. Then give three possible combinations of T-shirts and pairs of socks that you can buy.
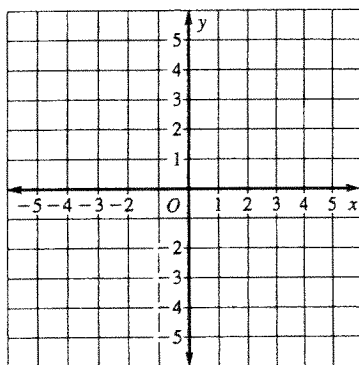
Simplify the expression.

156. $\sqrt{184}$ 157. $\sqrt{216}$ 158. $\sqrt{\dfrac{15t^8}{16t^6}}$ 159. $\sqrt{120x^4}$

Find the distance between the points. Then find the midpoint M of the segment whose endpoints are the given points.

160. $(8, -2), (0, 0)$ 161. $(1, 3), (-2, -6)$ 162. $(-7, 5), (2, 0)$

Draw △XYZ with vertices X(−5, −4), Y(−3, 0), and Z(−1, −4) on the given coordinate grid. Then find the coordinates of the vertices of the image after the specified transformation, and draw the image.

163. $(x, y) \rightarrow (x + 3, y + 5)$

164. Rotate 180°