

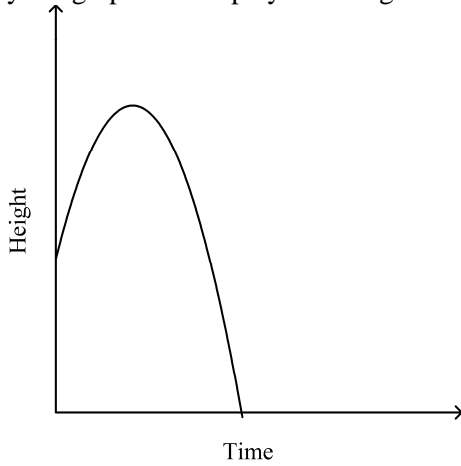
Algebra I CP Final Exam Review

Multiple Choice

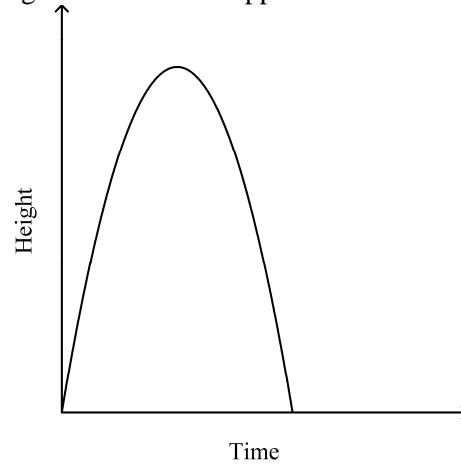
Identify the choice that best completes the statement or answers the question.

____ 1. Identify the graph that displays the height of a ping pong ball after it is dropped.

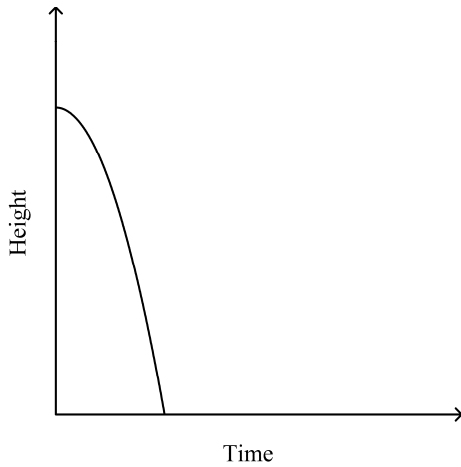
a.



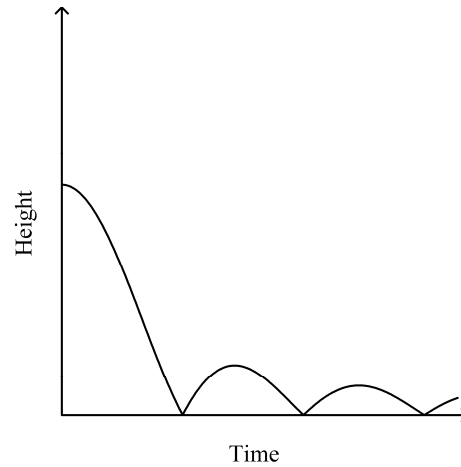
c.



b.



d.



_____ 2. Which relation is a function?

a.

x	y
3	8
5	10
6	6
9	-2

c.

x	y
3	8
5	10
6	6
5	-2

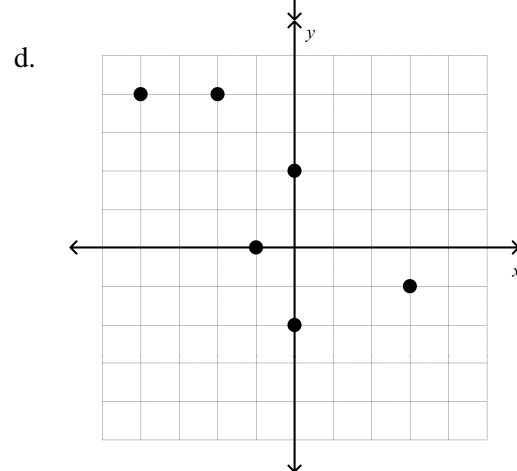
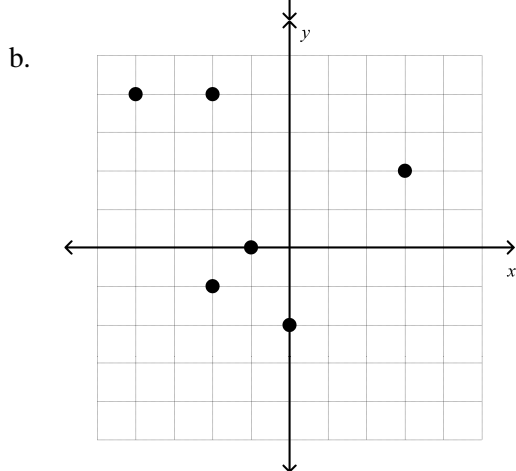
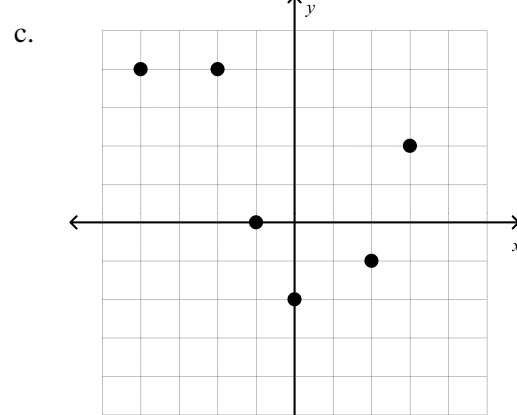
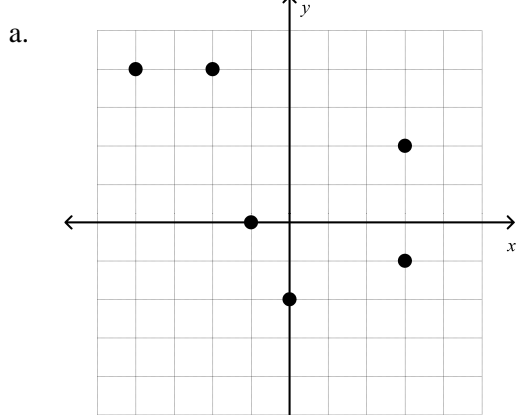
b.

x	y
3	8
5	10
3	6
9	-2

d.

x	y
6	8
5	10
6	6
9	-2

_____ 3. Which relation is a function?



Short Answer

Graph the function.

4. $y = -x^2 - 1$

5. $y = x^2 + 3x + 1$

Write the equation of the axis of symmetry.

6. $y = 2x^2 + 4x - 6$

7. $y = -3 - 9x - 3x^2$

Find the coordinates of the vertex of the graph of the function.

8. $y = 5x^2 - 4$

9. $y = 3x^2 - 4x + 3$

Solve the equation by graphing.

10. $m^2 + 4m = 5$

11. $m^2 = 3m + 4$

Evaluate the expression.

12. $6 + 5(-2)^2(5) - 2$

13. Evaluate the following expression if $a = 6$, $b = 7$, and $c = 10$.
 $3c + bc - 2a$

14. Solve the equation.

$$a = \frac{6(16-8)}{5(8)+8} + 7$$

Evaluate the expression. Show each step.

15. $9 + 7(64 - 4^3) + 3$

Simplify the expression. If not possible, write simplified.

16. $5(3a + 9f - 4f)$

Simplify the expression.

17. $4x + 4(7x + 7)$

18. $\sqrt{13} \cdot \sqrt{17}$

19. $\sqrt{8z^2y^3}$

20. $\frac{15}{\sqrt{7}}$

21. $\sqrt{\frac{3}{7}}$

22. $\frac{8}{5 + \sqrt{2}}$

23. $\frac{6\sqrt{3}}{-9 + \sqrt{6}}$

24. $8\sqrt{5} - 1\sqrt{5}$

25. $3\sqrt{19h} + 2\sqrt{6g} - 2\sqrt{19h} + 10\sqrt{6g}$

Solve the equation. Then check your solution.

26. $-\frac{3}{8} + y = \frac{7}{10}$

27. $\sqrt{7s - 20} = 6$

28. $\sqrt{4h} = 4$

29. $\sqrt{2a} = -6$

30. $\sqrt{4x + 13} = -7$

Solve the equation. Then check your solution.

31. $\frac{2}{3}x - \frac{4}{5} = \frac{3}{4} - \frac{1}{3}x$

32. $-3(-57n - 95) = 6(5n - 70)$

33. $4 - \frac{3}{5}(3a + 4) = 7$

Solve the proportion. If necessary, round to the nearest hundredth.

34. $\frac{4}{6} = \frac{d}{42}$

Solve the equation or formula for the variable specified.

35. $ab - 9c = 7$ for a

36. If $g(x) = x^2 - 5x - 1$, find $g(4)$.

Find the solution set for the equation, given the replacement set.

37. $y = -9x - 5$; $\{(0, -5), (1, -2), (-1, -7), (2, -4)\}$

Solve the equation for the given domain. Graph the solution set.

38. $3x + y = -2$ for $x = \{-1, 0, 1, 4\}$

Find the slope of the line that passes through the pair of points.

39. $(4, 1), (-1, -1)$

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

40. slope: $-\frac{6}{5}$, y-intercept: -10

Write an equation of the line that passes through each point with the given slope.

41. $(-5, 5), m = -2$

42. $(-6, 0), m = 1$

Write an equation of the line that passes through the pair of points.

43. $(3, 1), (-4, -2)$

Write the point-slope form of an equation for a line that passes through the point with the given slope.

44. $(6, -3), m = -\frac{4}{3}$

Write each equation in standard form.

45. $y - 8 = -3(x + 1)$

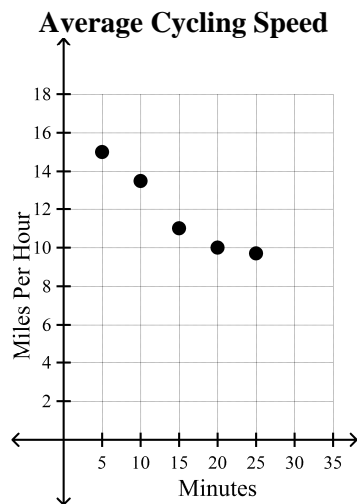
Write the equation in slope-intercept form.

46. $y + 4 = 2(x - 3)$

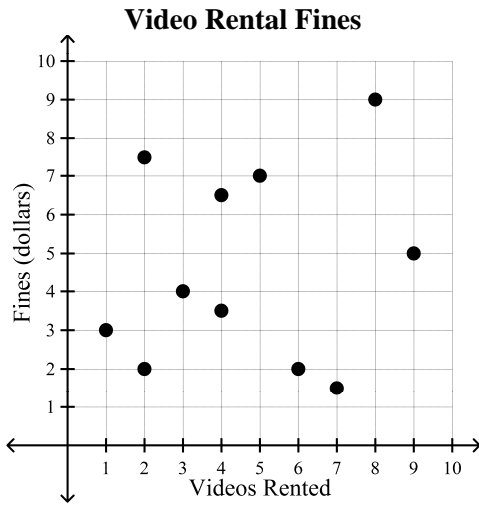
47. $y + 2 = -\frac{1}{5}(x - 4)$

Determine whether the graph shows a positive correlation, a negative correlation, or no correlation. If there is a positive or negative correlation, describe its meaning in the situation.

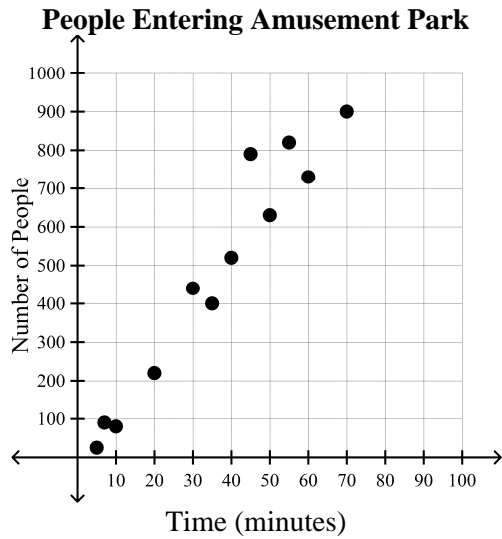
48.



49.



50.



Graph the system of equations. Then determine whether the system has no solution, one solution, or infinitely many solutions. If the system has one solution, name it.

51. $y = -5x + 5$
 $y = 5x - 5$

52. $x + y = 4$
 $-3x - 4 = \frac{y}{3}$

Use substitution to solve the system of equations.

53. $y = x + 10$
 $3x - 6y = -9$

54. $-6 = x - 2y$
 $-4x + 4 = -6y$

55. The sum of two numbers is 90. Their difference is 12. What are the numbers?

Use elimination to solve the system of equations.

56. $2x - 3y = 10$
 $4x + 9y = -10$

57. $-8x - 2y = 10$
 $9x + 3y = -6$

58. The sum of Jack and his father's ages is 52. Jack's father's age is 2 less than 5 times Jack's age. Find the ages of Jack and his father.

Solve the inequality. Graph the solution on a number line.

59. $k - 5 < 2$

60. $-2 \geq w - 6$

61. $y + 5 > -2$

62. $1 \geq 1 + p$

Solve the inequality.

63. $4a + 4 - 6a > 12$

64. $\frac{3x - 6 + 3x}{3} < 2$

65. $4(4g - 3) - 4g \geq -6(g - 6) + 6$

66. $\frac{b}{4} \geq 12$

67. $\frac{-3b}{8} > -3$

68. $9m \leq -72$

69. $-2f < 18$

70. $3h + 9 > 15$

71. $-1 \geq -9n - 8 + 4n$

72. $4.5s - 3.6 \leq 2.5s + 4.8$

73. $3.4d + 9.9 < -3.2d$

74. $-5(3z + 3) < -3(5z - 4)$

75. $0.3(2j + 2) > 2.4 - (-0.4j - 3)$

76. $9 + 11c < 2(0.5c - 5)$

Solve the compound inequality and graph the solution set.

77. $u + 6 \geq 1$ and $u - 6 < 2$

78. $g - 5 > -1$ or $g + 8 > 10$

Simplify. Assume that no denominator is equal to zero.

79. $(a^5 b^5)(a^5 b^3)$

80. $(-6hi^2 j^4)(3h^3 ij^3)$

81. $(4g^3 h^4)^3$

82. $([3^2]^3 g^5 h^8)^2$

83. $\frac{3^{10}}{3^7}$

84.
$$\frac{(2a^5b)^2}{24b^6}$$

85.
$$\left(\frac{2a}{a^2}\right)^{-2}$$

86.
$$\frac{36m^{-4}n^6}{4mn^{-2}p^{-4}}$$

Find the degree of the polynomial.

87. $10a^5b^4$

88. $10a^3b^2 + 13a^4b^4 - 6a^4b^6$

Arrange the terms of the polynomial so that the powers of x are in descending order.

89. $2xy^2 + x^2y^4 - 2x^3 + y^3$

90. $4x^2y^5 - 3xy^4 - 6y^2 + 2x^3$

Find the sum or difference.

91. $(5a - 3a^2) + (8 + 7a)$

92. $(6a - 2b^2 - a) + (b - 3 + 9a^2)$

93. $(5a - 3a^2) - (-6a - 6)$

94. $(11p - 6q^2 - q) - (q^2 - 5p + 7p^2)$

Find the product.

95. $-5r^3(4r^2 - 2r - 5)$

96. $-2s^2t^4(-6s^3t^5 - 6st^4 - 4t)$

Solve the equation.

97. $3(4x + 4) = 2(5x + 9) - 12$

98. $3p(3p - 8) - 8 = 9p(p - 3) + 4$

99. $4x(-x - 3) = 2(-2x^2 - 2) - 2$

100. $3y(y - 3) + 5 = 3(y^2 - 2y) - 2y$

101. $m(m - 3) - 2m(m - 4) = -(m^2 - 4m) + 6$

102. $2n(n + 4) + n(n - 2) - 15 = -3n(-n + 1) + 2n + 6$

103. $w(3w + 2) - 2(w^2 - 8) = w(w + 5) - 6w + 7$

104. $2y(y + 3) - 7y = y(y + 3) + y(y - 6) + 8$

105. $4g(g - 3) - 2g(g - 2) = 2(g^2 + 3) - 6g - 2$

106. $8x(x - 2) + x(x - 5) + 7x + 4 = 9(x^2 + 1) - 7(x + 6) - 5$

107. $q(q + 4) = 0$

108. $(r - 3)(r + 6) = 0$

109. $(7p + 14)(8 - 2p) = 0$

110. $4k^2 = 5k$

111. $-24c^2 = 36c$

112. $12d^2 = -27d$

113. $(12x - 4)(3x + 6) = 0$

114. $(4y + 8)(3y - 2) = 0$

115. $20g^2 = 16g$

116. $(3n + 6)(6n - 3) = 0$

Find the product.

117. $(r - 8)(r + 5)$

118. $(-6t - 4v)(-7t - 4v)$

119. $(-6k + 4)(-7k^2 + 2k - 7)$

120. $(7m^2 - 6m + 4)(-4m^2 - 2m - 7)$

121. $(b + 7)^2$

122. $(6c + 6)^2$

123. $(4r - 9)^2$

124. $(6g - 4h)^2$

Find the product of each sum and difference.

125. $(3l + 9)(3l - 9)$

126. $(6c + 9)(6c - 9)$

Factor the monomial completely.

127. $63a^3b^3$

128. $-110c^4d^2e^3$

Find the GCF of the set of monomials.

129. $36s^5t^2, 120s^2t$

130. $39x^4y^3, 96xy^2, 114x^2y^3$

Factor the polynomial.

131. $12g + 20h$

132. $16j^2k - 8j^6k^5 + 60j^3$

Factor the trinomial.

133. $x^2 + 15x + 14$

134. $g^2 - 9g - 22$

Solve the trinomial equation.

135. $r^2 - 18r + 56 = 0$

136. $k^2 + 8k = 84$

Factor the trinomial, if possible. If the trinomial cannot be factored using integers, write prime.

137. $3t^2 + 10t + 8$

Solve the equation.

138. $12x^2 - 14x + 4 = 0$

139. $8y^2 - 12y + 4 = y + 10$

Factor the polynomial, if possible. If the polynomial cannot be factored, write prime.

140. $12v^2 - 27$

141. $9n^3 + 18n^2 - 121n - 242$

Solve the equation by factoring.

142. $36d^3 - 121d = 0$

143. $25m^3 - 75m^2 - 9m + 27 = 0$

Factor the polynomial.

144. $12b^2 - 192$

145. $45m^4 + 18m^3 - 20m^2n^2 - 8mn^2$

Solve the quadratic equation by finding the square root. Round to the nearest tenth if necessary.

146. $b^2 - 16b + 64 = 19$

147. $d^2 + 22d + 121 = 12$

Name: _____

ID: A

Solve the equation by using the Quadratic Formula. Round to the nearest tenth if necessary.

148. $h^2 + 28h - 3 = 0$

149. $v(2v - 20) = -21$

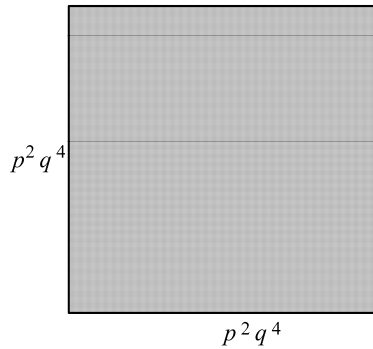
State the value of the discriminant. Then determine the number of real roots of the equation.

150. $n(8n + 10) = -15$

151. $-11w^2 = -(10w - 8)$

Express the area of the figure as a monomial.

152.



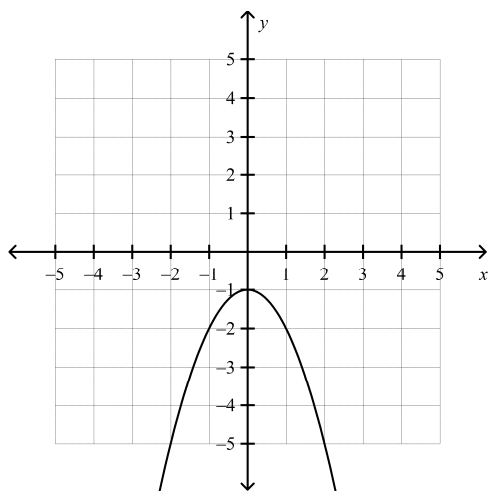
Algebra I CP Final Exam Review Answer Section

MULTIPLE CHOICE

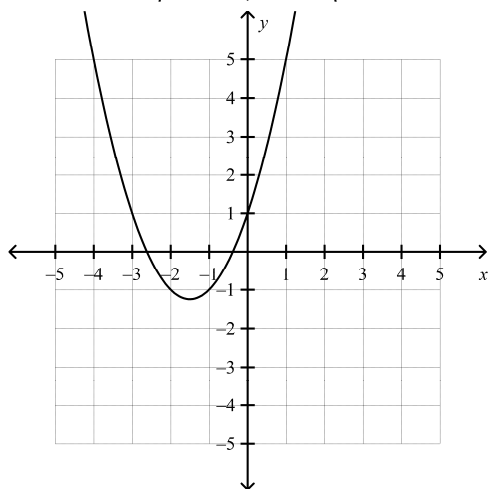
1. D
2. A
3. C

SHORT ANSWER

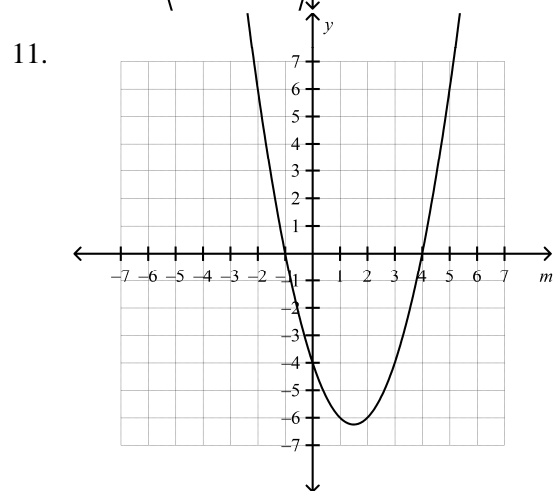
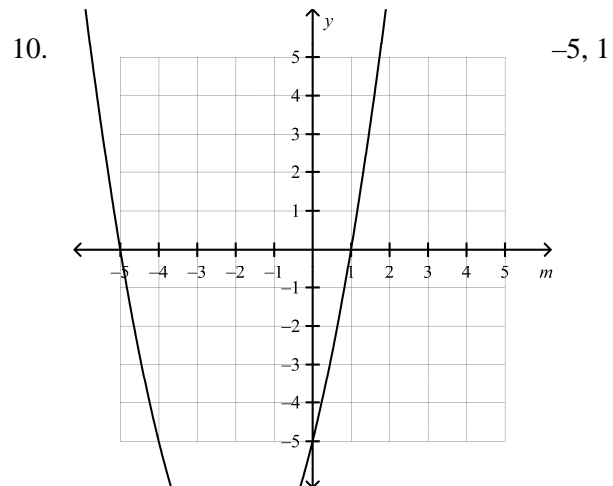
4.



5.



6. $x = -1$
7. $x = -\frac{3}{2}$
8. $(0, -4)$
9. $(\frac{2}{3}, \frac{5}{3})$



$-1, 4$

12. 104

13. 88

14. 8

15. $9 + 7(64 - 4^3) + 3$

$$= 9 + 7(64 - 64) + 3$$

$$= 9 + 7(0) + 3$$

$$= 9 + 0 + 3$$

$$= 12$$

16. $15a + 25f$

17. $32x + 28$

18. $\sqrt{221}$

19. $2zy\sqrt{2y}$

20. $\frac{15\sqrt{7}}{7}$

21. $\frac{\sqrt{21}}{7}$

22. $\frac{8(5 - \sqrt{2})}{23}$

23. $\frac{-54\sqrt{3} - 18\sqrt{2}}{75}$

24. $7\sqrt{5}$

25. $\sqrt{19h} + 12\sqrt{6g}$

26. $1\frac{3}{40}$

27. 8

28. 4

29. No solution

30. No solution

31. $1\frac{11}{20}$

32. -5

33. -3

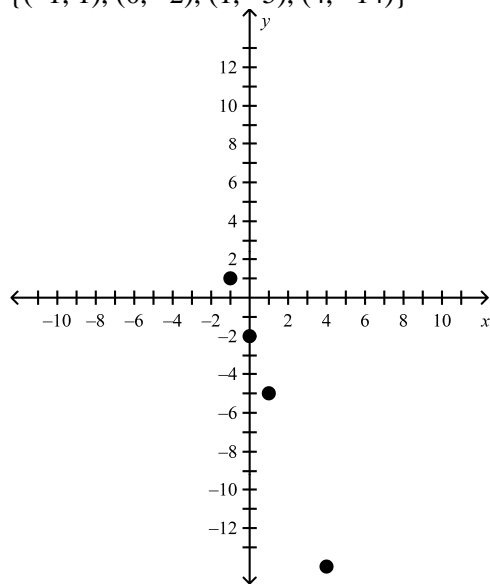
34. 28

35. $a = \frac{7 + 9c}{b}$

36. -5

37. $\{(0, -5)\}$

38. $\{(-1, 1), (0, -2), (1, -5), (4, -14)\}$



39. $\frac{2}{5}$

40. $y = -\frac{6}{5}x - 10$

41. $y = -2x - 5$

42. $y = x + 6$

43. $y = \frac{3}{7}x - \frac{2}{7}$

44. $y + 3 = -\frac{4}{3}(x - 6)$

45. $3x + y = 5$

46. $y = 2x - 10$

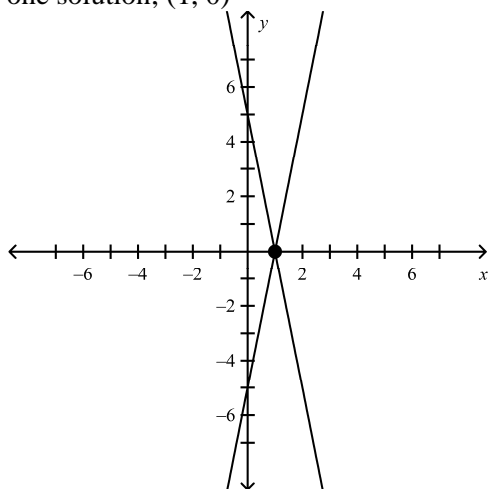
47. $y = -\frac{1}{5}x - \frac{6}{5}$

48. negative; as time passes, speed decreases

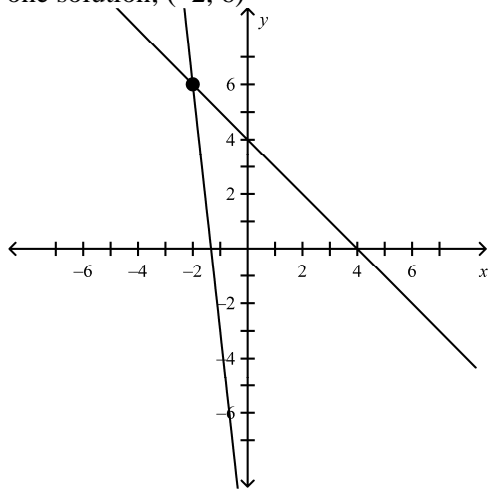
49. no correlation

50. positive; as time passes, the number of people entering increases.

51. one solution; (1, 0)



52. one solution; (-2, 6)



53. (-17, -7)

54. (22, 14)

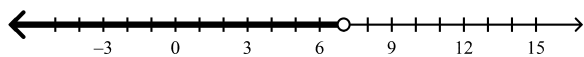
55. 39 and 51

56. (2, -2)

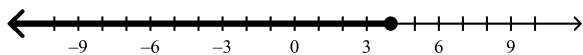
57. (-3, 7)

58. 9, 43

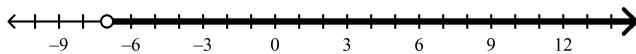
59. $k < 7$



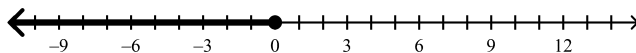
60. $4 \geq w$



61. $y > -7$



62. $p \leq 0$



63. $a < -4$

64. $x < 2$

65. $g \geq 3$

66. $b \geq 48$

67. $b < 8$

68. $m \leq -8$

69. $f > -9$

70. $h > 2$

71. $-1\frac{2}{5} \leq n$

72. $s \leq 4.2$

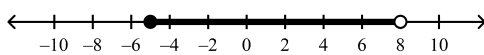
73. $-1.5 > d$

74. \mathbb{R} (all real numbers)

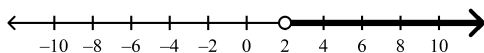
75. $j > 24$

76. $c < -1.9$

77. $-5 \leq u < 8$



78. $g > 2$



79. $a^{10}b^8$

80. $-18h^4i^3j^7$

81. $64g^9h^{12}$

82. $531,441g^{10}h^{16}$

83. 3^3

84. $\frac{a^{10}}{6b^4}$

85. $\frac{a^2}{4}$

86. $\frac{9n^8p^4}{m^5}$
87. 9
88. 10
89. $-2x^3 + x^2y^4 + 2xy^2 + y^3$
90. $2x^3 + 4x^2y^5 - 3xy^4 - 6y^2$
91. $-3a^2 + 12a + 8$
92. $9a^2 - 2b^2 + 5a + b - 3$
93. $-3a^2 + 11a + 6$
94. $-7p^2 - 7q^2 + 16p - q$
95. $-20r^5 + 10r^4 + 25r^3$
96. $12s^5t^9 + 12s^3t^8 + 8s^2t^5$
97. -3
98. 4
99. $\frac{1}{2}$
100. 5
101. 6
102. 3
103. -3
104. 4
105. -2
106. 6
107. $\{0, -4\}$
108. $\{3, -6\}$
109. $\{-2, 4\}$
110. $\left\{0, \frac{5}{4}\right\}$
111. $\left\{0, -\frac{3}{2}\right\}$
112. $\left\{0, -\frac{9}{4}\right\}$
113. $\left\{\frac{1}{3}, -2\right\}$
114. $\left\{-2, \frac{2}{3}\right\}$
115. $\left\{0, \frac{4}{5}\right\}$
116. $\left\{\frac{1}{2}, -2\right\}$

117. $r^2 - 3r - 40$
118. $42t^2 + 52tv + 16v^2$
119. $42k^3 - 40k^2 + 50k - 28$
120. $-28m^4 + 10m^3 - 53m^2 + 34m - 28$
121. $b^2 + 14b + 49$
122. $36c^2 + 72c + 36$
123. $16r^2 - 72r + 81$
124. $36g^2 - 48gh + 16h^2$
125. $9l^2 - 81$
126. $36c^2 - 81$
127. $3 \cdot 3 \cdot 7 \cdot a \cdot a \cdot a \cdot b \cdot b \cdot b$
128. $-1 \cdot 2 \cdot 5 \cdot 11 \cdot c \cdot c \cdot c \cdot c \cdot d \cdot d \cdot e \cdot e \cdot e$
129. $12s^2t$
130. $3xy^2$
131. $4(3g + 5h)$
132. $4j^2(4k - 2j^4k^5 + 15j)$
133. $(x + 1)(x + 14)$
134. $(x + 2)(x - 11)$
135. $\{14, 4\}$
136. $\{-14, 6\}$
137. $(3t + 4)(t + 2)$
138. $\left\{\frac{2}{3}, \frac{1}{2}\right\}$
139. $\left\{-\frac{3}{8}, 2\right\}$
140. $3(2v + 3)(2v - 3)$
141. $(n + 2)(3n + 11)(3n - 11)$
142. $\left\{0, -\frac{11}{6}, \frac{11}{6}\right\}$
143. $\left\{3, -\frac{3}{5}, \frac{3}{5}\right\}$
144. $12(b + 4)(b - 4)$
145. $m(5m + 2)(3m + 2)(3m - 2)$
146. 12.4, 3.6
147. -7.5, -14.5
148. 0.1, -28.1
149. 8.8, 1.2
150. -380, 0 real roots
151. -252, 0 real roots

152. p^4q^8

Area of a square = a^2

To multiply the powers that have the same base, add the exponents.