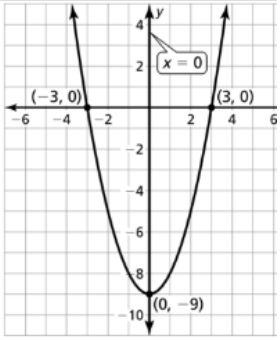
Answers to Algebra 2 L2.2c Graphing Quadratics Using X-Intercepts, Pg 63, #53-79

53.



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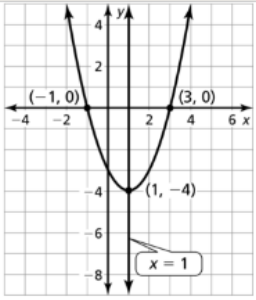

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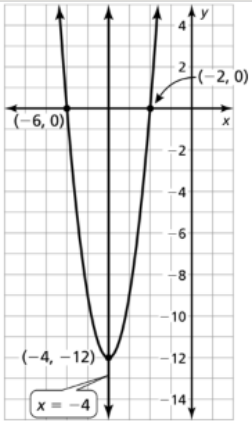

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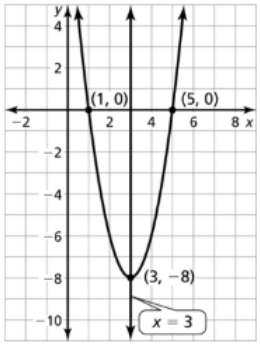

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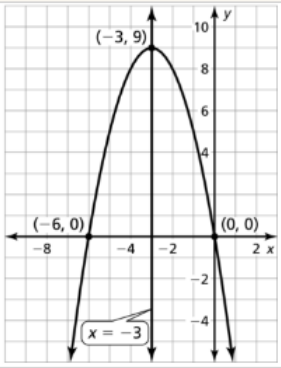

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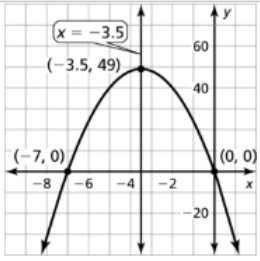

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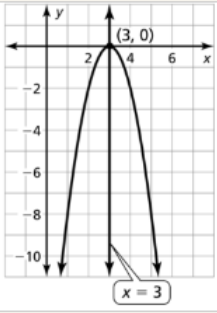
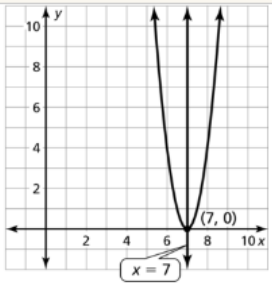


60.



61. $p = 2, q = -6$; The graph is decreasing to the left of $x = -2$ and increasing to the right of $x = -2$.

62. $p = -1, q = 3$; The graph is decreasing to the left of $x = 1$ and increasing to the right of $x = 1$.

63. $p = 4, q = 2$; The graph is increasing to the left of $x = 3$ and decreasing to the right of $x = 3$.

64. $p = -5, q = -1$; The graph is increasing to the left of $x = -3$ and decreasing to the right of $x = -3$.

65. the second kick; the first kick

66. 160 ft; about 1.5 ft

67. no; Either of the points could be the axis of symmetry, or neither of the points could be the axis of symmetry. You can only determine the axis of symmetry if the y-coordinates of the two points are the same, because the axis of symmetry would lie halfway between the two points.

68. *Sample answer:* $y = 2(x - 2)(x - 4)$ and $y = 2(x + 1)(x - 7)$

69. \$1.75

70. \$300

71. All three graphs are the same; $f(x) = x^2 + 4x + 3$, $g(x) = x^2 + 4x + 3$

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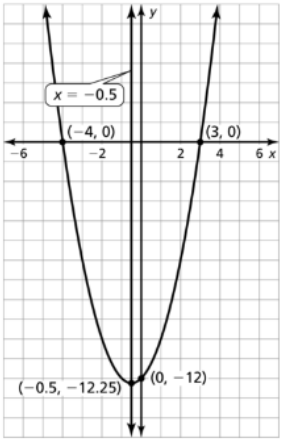
72. $f(x) = (x + 4)(x - 3)$

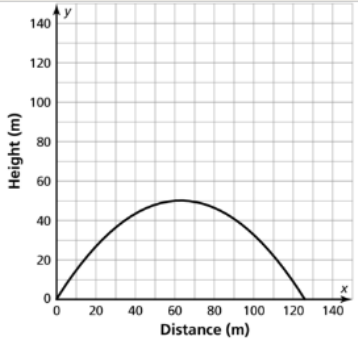


73. no; The vertex of the graph is (3.25, 2.1125), which means the mouse cannot jump over a fence that is higher than 2.1125 feet.

74. **a.** the minimum

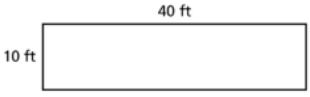
b. Instead of representing the minimum, $f\left(\frac{p+q}{2}\right)$ would represent the maximum.

75.



The domain is $0 \le x \le 126$ and the range is $0 \le y \le 50$; The domain represents the distance from the start of the bridge on one side of the river, and the range represents the height of the bridge.

76. *Sample answer:*



Of all possible designs, a square garden with sides of 25 feet will have the greatest area; A square has the largest area of all rectangles with the same perimeter.

77. no; The vertex must lie on the axis of symmetry, and (0, 5) does not lie on $x = -1$.

78. The y-intercept is apq.

79. **a.** about 14.1%; about 55.5 cm^3/g

b. about 13.6%; about 44.1 cm^3/g

c. The domain for hot-air popping is $5.52 \le x \le 22.6$, and the range is $0 \le y \le 55.5$. The domain for hot-oil popping is $5.35 \le x \le 21.8$, and the range is $0 \le y \le 44.1$. This means that the moisture content for the kernels can range from 5.52% to 22.6% and 5.35% to 21.8%, while the popping volume can range from 0 to 55.5 cubic centimeters per gram and 0 to 44.11 cubic centimeters per gram.