Answers for 2.4

For use with pages 101–106

2.4 Skill Practice

1. standard

2. First, use the slope formula to find m. Then use the point-slope formula with either point.

3. $y = 2$

4. $y = 3x - 4$

5. $y = 6x$

6. $y = \frac{2}{3}x + 4$

7. $y = -\frac{5}{4}x + 7$

8. $y = -5x - 1$

9. $y = 4x - 2$

10. $y = -3x + 8$

11. $y = 2x + 11$

12. $y = -6$

13. $y = -9x + 85$

14. $y = \frac{3}{4}x - 9$

15. $y = -\frac{4}{7}x + 1$

16. $y = \frac{3}{2}x + 8$

17. $y = -\frac{1}{3}x - 2$

18. Subtracting the x-coordinate in the point gives $x - (-4) = x + 4$;
$y - 2 = 3(x + 4)$,
$y - 2 = 3x + 12$, $y = 3x + 14$.

19. The x- and y-coordinates were transposed; $y - 1 = -2(x - 5)$,
$y - 1 = -2x + 10$,
$y = -2x + 11$.

20. $y = -4x - 17$

21. $y = -x + 8$

22. $y = 3x + 2$

23. $y = -3x + 13$

24. $y = \frac{1}{2}x + 5$

25. $y = -\frac{1}{4}x - \frac{1}{4}$

26. C

27. $y = -2x + 6$

28. $y = 5x - 16$

29. $y = -\frac{1}{4}x + \frac{19}{4}$

30. $y = 2x + 5$

31. $y = -3x + 11$

32. $y = \frac{1}{2}x - 2$

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

34. $y = -\frac{3}{2}x + \frac{1}{2}$

35. $y = 5x + 23$

36. $y = -\frac{1}{3}x + 25$

37. $y = -3x + 17.5$

38. $y = -1.25x + 1.65$

39. C

40. $3x + y = 5$

41. $-4x + y = -3$

42. $3x + 2y = -2$

43. $4x - 5y = -7$

44. $2x - y = -5$

45. $4x + 3y = 32$

46. **a.** $y = 4$ **b.** $x = 3$

c. $x = 3$ **d.** $y = 4$

47. *Sample answer:* $y = -\frac{1}{2}x + 8$

48. **a.** Since the lines are parallel, the slopes must be equal.

$m_1 = -\frac{A_1}{B_1}$ and $m_2 = -\frac{A_2}{B_2}$,

so $-\frac{A_1}{B_1} = -\frac{A_2}{B_2}$. Cross multiplication gives $A_1B_2 = A_2B_1$.

b. Since the lines are perpendicular, the slopes must be negative reciprocals of each other.

$m_1 = -\frac{A_1}{B_1}$ and $m_2 = -\frac{A_2}{B_2}$,

so $-\frac{A_1}{B_1} = \frac{B_2}{A_2}$. Cross multiplication gives $A_1A_2 = -B_1B_2$, then adding B_1B_2 to both sides gives $A_1A_2 + B_1B_2 = 0$.

49. *Sample answer:* The two points on the line are $(a, 0)$ and $(0, b)$.

The slope of the line is $-\frac{b}{a}$, so the equation is $y = -\frac{b}{a}x + b$.

Multiplying by a to clear fractions gives $ay = -bx + ab$. Adding bx to both sides gives $bx + ay = ab$, then dividing by ab results in $\frac{x}{a} + \frac{y}{b} = 1$.

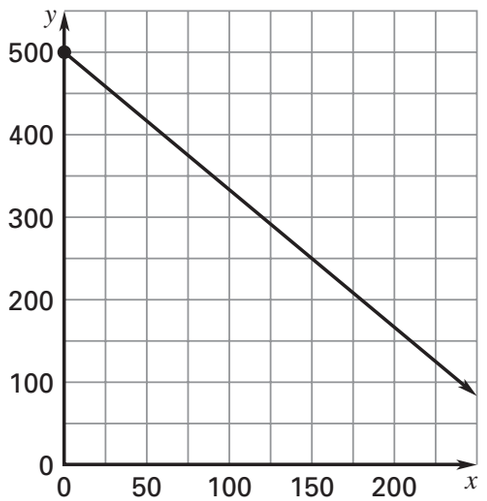
2.4 Problem Solving

50. $c = 350m + 6500$

51. $n = 15t + 50$

52. $8t + 5p = 400$; 56 pepper plants

53. $15x + 9y = 4500$



Find the point on the line where x is 200, then the corresponding y-coordinate is how many student tickets were sold.

54. a. $21.75x + 17y = 86{,}000$

b. 2000 ft^2

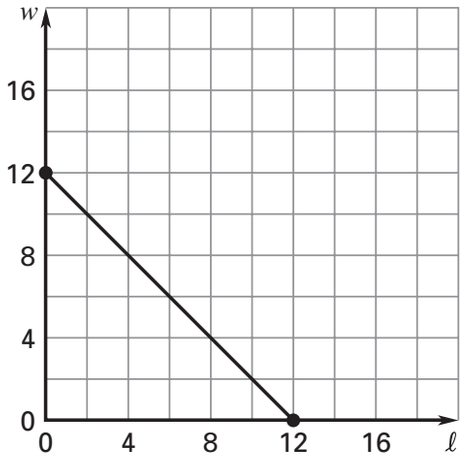
c. about 4439 ft^2

55. $y = 1.66x + 21.62$; \$48.18

56. $y = \frac{1}{10}x + 24.5$

57. a. $2\ell + 2w = 24$

b.



c. *Sample:*

ℓ	w
6	6
7	5
8	4
9	3
10	2

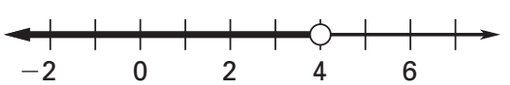
58. $y = 15x + 70$

2.4 Mixed Review

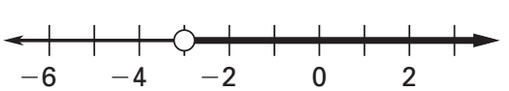
59. 3 **60.** 4 **61.** −7

62. 0.75 **63.** −3.5 **64.** 0.8

65. $x < 4$



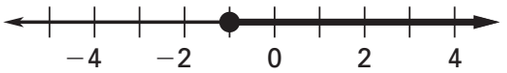
66. $x > -3$



67. $x \geq 3$

68. $x \leq -5$

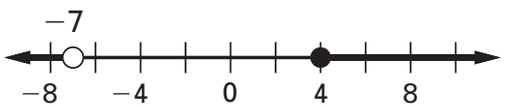
69. $x \geq -1$



70. $2 \leq x \leq 10$

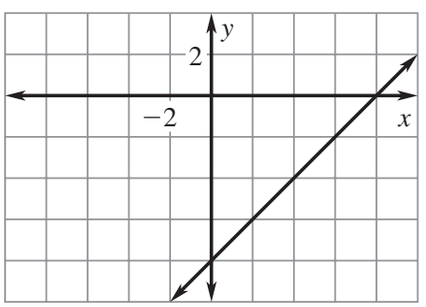
71. no solution

72. $x < -7$ or $x \geq 4$

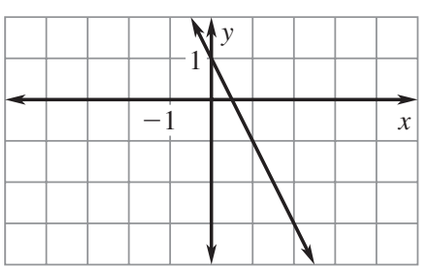


73. $x < 3$ or $x \geq 5$

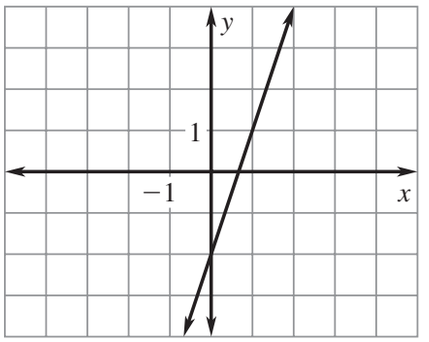
74.



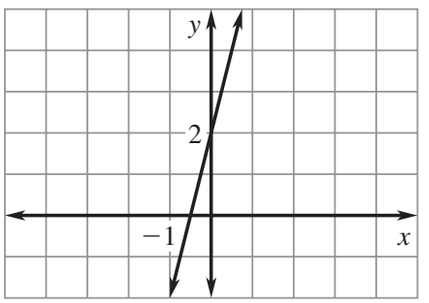
75.



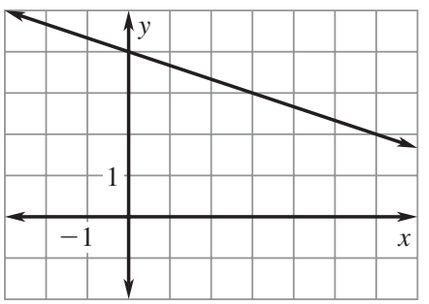
76.



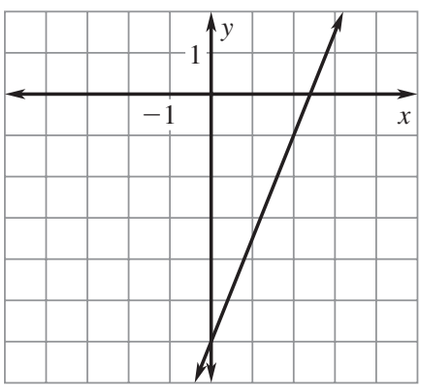
77.



78.



79.

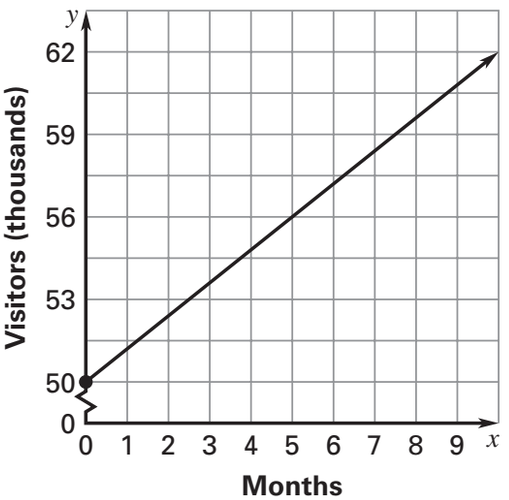


80. $-\frac{2}{5}$ ft per day

2.1–2.4 Mixed Review of Problem Solving

1. a. $v = 1200t + 50{,}000$

b.



c. 60,800 visitors

2. a. 829 people per yr

b. $P = 829t + 219{,}531$

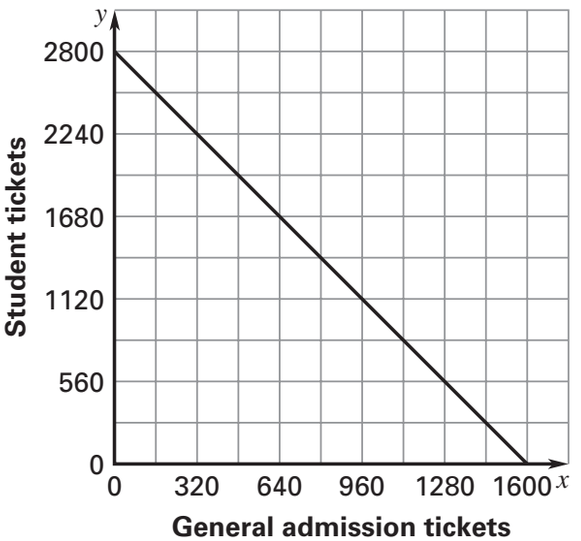
c. 236,111 people

3. Yes; each input has exactly one output.

4. *Sample answer:* $y = -\frac{1}{3}x - 4$

5. a. $7x + 4y = 11{,}200$

b.



c. No. *Sample answer:* Substitute 950 for x into the equation and solving it gives 1137.5 student tickets sold. It is not possible to sell one-half of a ticket.

d. *Sample answer:* General: 120 and student: 2590, general: 980 and student: 1085, general: 1500 and student: 175; I looked at the graph to find solutions.

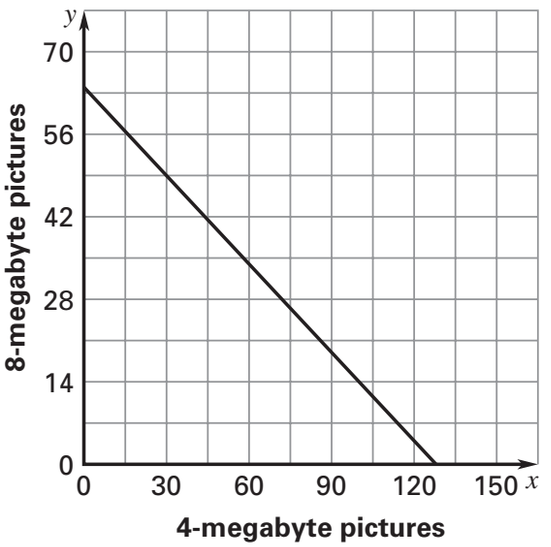
6. 12;

		1	2
⊙	⊘ ⊙	⊘ ⊙	⊙
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

7. $\frac{5}{3}$;

	5	/	3
⊙	⊘ ⊙	⊘ ⊙	⊙
	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

8. a. $4x + 8y = 512$



b. slope: the ratio of the 4-megabyte picture to the 8-megabyte picture; y-intercept: no 4-megabyte pictures, x-intercept: no 8-megabyte pictures