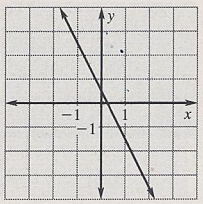
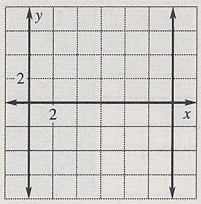
42.



43.



Quiz 2 (p. 106)

1. $y - 6 = \frac{2}{3}(x - 0)$

$y - 6 = \frac{2}{3}x$

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

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

$y + 3 = 2x + 8$

$y = 2x + 5$

3. $y + 7 = -\frac{1}{5}(x - 2)$

$y + 7 = -\frac{1}{5}x + \frac{2}{5}$

$y = -\frac{1}{5}x - \frac{33}{5}$

4. $m_1 = \frac{4 - 2}{0 - 4} = \frac{2}{-4} = -\frac{1}{2}$

$m_2 = 2$

$y + 2 = 2(x - 1)$

$y + 2 = 2x - 2$

$y = 2x - 4$

5. relatively no correlation

6. negative correlation

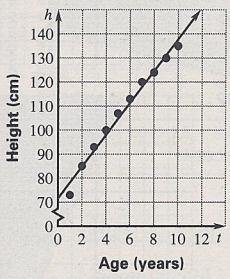
7. positive correlation

8. $d = 1.3h$

$5.2 = 1.3h$

$4 \text{ ft} = h$

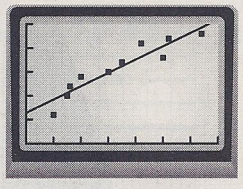
9.



$h = 6.63t + 71.5$

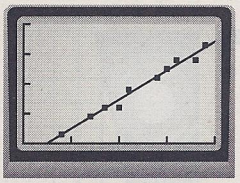
Technology Activity 2.5 (page 107)

1.



$y = 0.0028x + 0.32$

2.

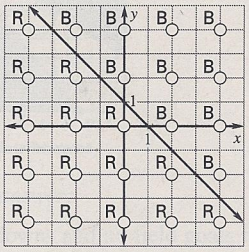


$y = 97.8x - 247.8$

Lesson 2.6

Activity (p. 108)

1. and 2.



3. The blue dots lie on or above the line; the red dots are below the line.

4. *Sample answer:* Graph the related line, solid if the inequality is ≤ or ≥ ; dashed if the inequality is < or >. Test a point not on the line to see if it is a solution of the inequality and find out which region of the plane to shade.

2.6 Guided Practice (p. 111)

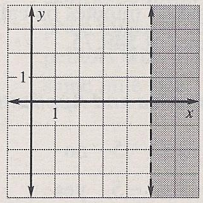
1. *Sample answer:* The graph of a linear equation is a line in the plane, while the graph of a linear inequality is a half-plane with a line as its boundary.

2. Dashed; solid; *Sample answer:* The points for which $Ax + By = C$ are solutions of the latter inequality and are included as part of the graph by using a solid line, but are not solutions of $Ax + By < C$.

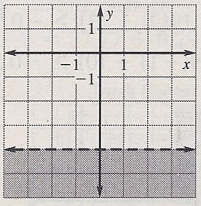
3. False; $(3)\left(\frac{4}{3}\right) - 0 = 4$, so $\left(\frac{4}{3}, 0\right)$ is not a solution of the inequality.

4. True; for points (x, y) on the line, $y = 3x + 5$. For points (x, y) below the line, the inequality is satisfied, since the y values are smaller.

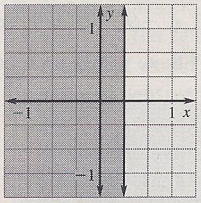
5.



6.



7.



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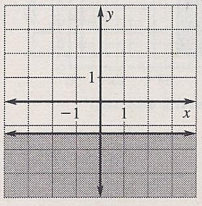

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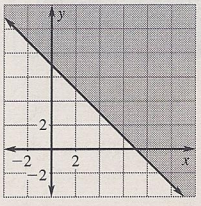

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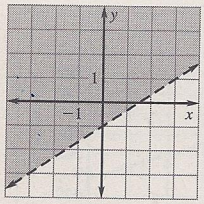
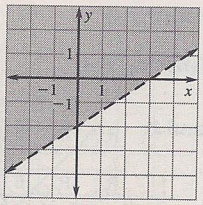


11.



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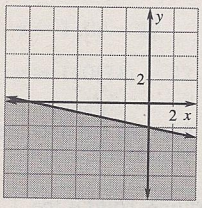
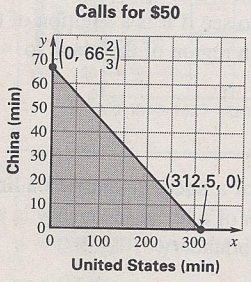


13.



One possible solution is to spend 50 minutes on calls to China and 78 minutes on calls in the United States, for a total cost of $49.98. Another solution would be to spend 50 minutes on calls within the United States and 56 minutes on calls to China; this uses exactly $50. A third solution is 100 minutes on calls within the United States and 45 minutes on calls to China. This solution uses a total of $49.75.

2.6 Practice and Applications (p. 111)

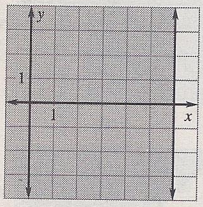
14. $0 \le -5$ no
$-5 \le -5$ yes

15. $2(-6) \ge 7$ no
$2(4) \ge 7$ yes

16. $2 < -9(-2) + 7$ yes
$-8 < -9(3) + 7$ no

17. $19(2) + (3) \ge -0.5$ yes
$19(-1) + (0) \ge -0.5$ no

18.



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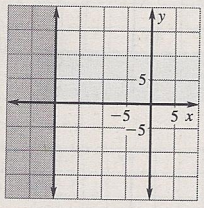

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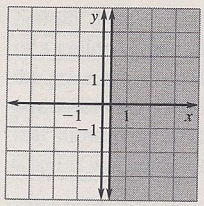

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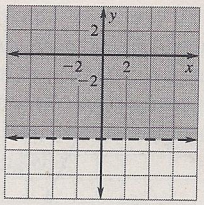

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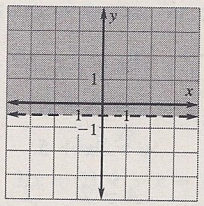

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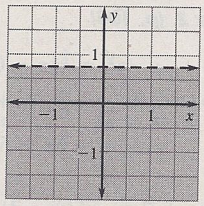
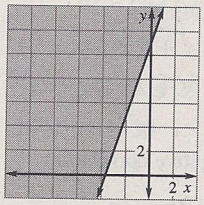


24. B **25.** C **26.** A

27.



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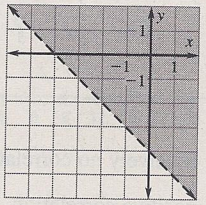

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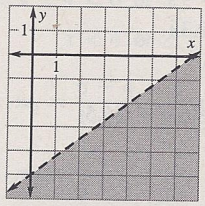

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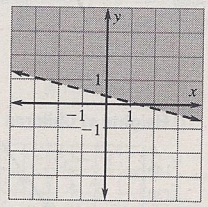

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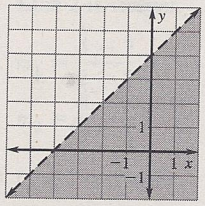

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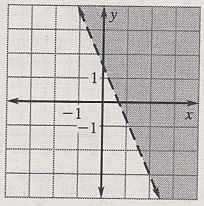
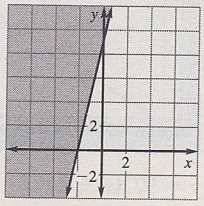


33. C **34.** A **35.** B

36.



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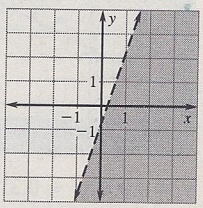

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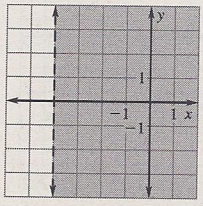

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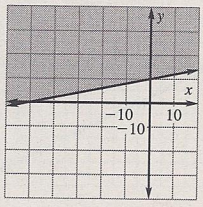

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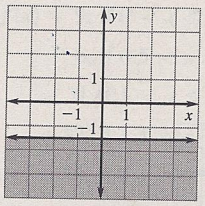

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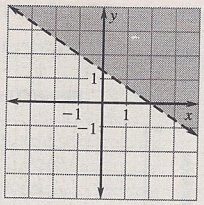

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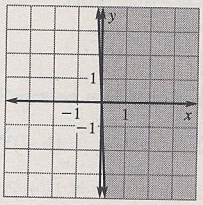

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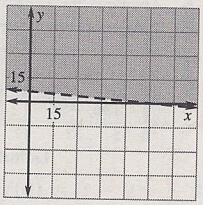

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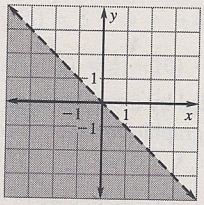
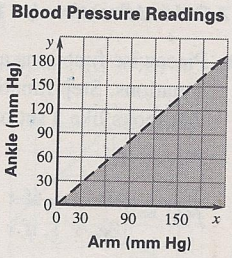
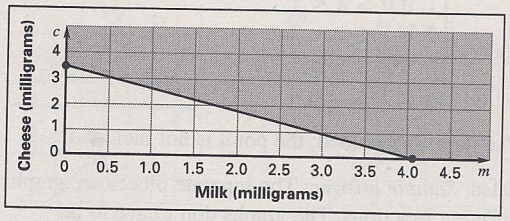


45. $y < 0.9x$



46. $296m + 338c \geq 1200$

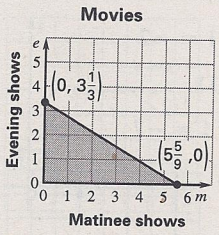


47. $296m + 338(2) \geq 1200$

$296m \geq 524$

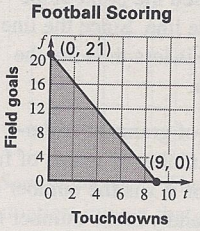
$m \geq 1.77$ cups

48. $4.5m + 7.5e \leq 25$



49. *Sample answer:* You can attend 5 matinees and no evening showings for a total of \$22.50, 2 of each for a total cost of \$24 or 3 evening showings at a cost of \$22.50.

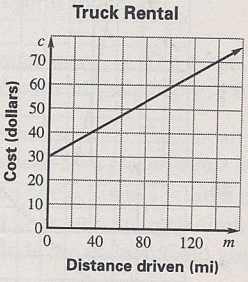
50. $7t + 3f \leq 63$



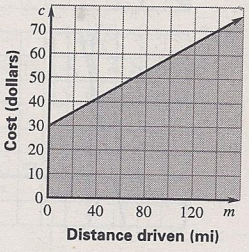
51. *Sample answer:*

9 touchdowns and no field goals for 63 points;
5 touchdowns and 1 field goal for 38 points;
2 touchdowns and 3 field goals for 23 points;
4 touchdowns and 11 field goals for 61 points;
6 touchdowns and 1 field goal for 45 points.

52. a. $c = 29.99 + 0.29m$



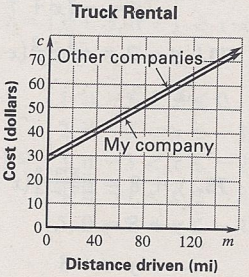
b. $c = 29.99 + 0.29m$



c. *Sample answer:* If I charge a lower flat rate and not the per mile charge, I will always be lower in price than my competitors with the same mile rate.

d. *Sample answer:*

$c = 27.77 + 0.29$ m



e. *Sample answer*: If I raise my flat rate my total cost would be more expensive until both cars have gone a distance that would make my total cost lower.

53. $4x + 9y \leq 36$

54. *Sample answer:* I used the x and y intercepts to find two points on the line. From there I used the point-slope formula to find the equation of the line. Since the line is drawn in full and the area shaded is less than 36, the equation is written $4x + 9y \leq 36$.

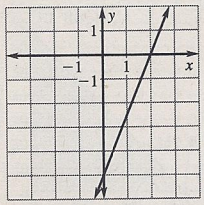
55. *Sample answer:* x is the number of grams of carbohydrates and protein and y is the number of grams of fat in a food that has 56 or fewer cal., or if x is the number of minutes spent walking at 4 mi/h and y is the number of minutes spent riding a bike at 9 mi/h, then $4x + 9y \leq 36$ represents those combinations of (x, y) that correspond to 36 or fewer miles.

2.6 Mixed Review (p. 113)

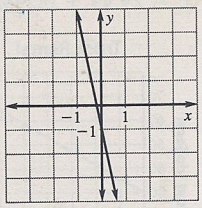
56. 1.0×10^7 **57.** 1.65×10^9 **58.** 2.03×10^5

59. 6.7×10^{-4} **60.** 9×10^{-7} **61.** 8.08×10^{-2}

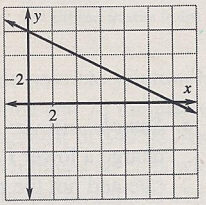
62.



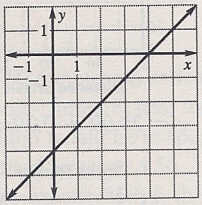
63.



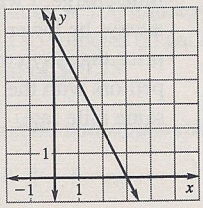
64.



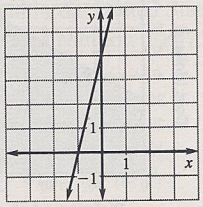
65.



66.



67.



68. $y - 2 = \frac{2-5}{2-5}(x - 2)$

$y - 2 = x - 2$

$y = x$

69. $y - 7 = \frac{7-1}{0-5}(x - 0)$

$y - 7 = -\frac{6}{5}x$

$y = -\frac{6}{5}x + 7$

70. $y - 6 = \frac{6+2}{-1-8}(x + 1)$

$y - 6 = -\frac{8}{9}(x + 1)$

$y = -\frac{8}{9}x + \frac{46}{9}$

71. $y - 2 = \frac{-4-2}{3-3}(x - 3)$

$x = 3$

72. $y - 9 = \frac{9+6}{1+10}(x - 1)$

$y - 9 = \frac{15}{11}(x - 1)$

$y = \frac{15}{11}x + \frac{84}{11}$

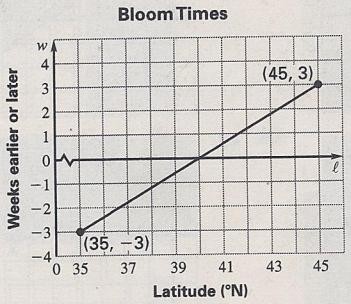
73. $y + 8 = \frac{-8+8}{-7-4}(x - 4)$

$y + 8 = 0$

$y = -8$

74. domain: $35 \leq l \leq 45$

range: $-3 \leq w \leq 3$



Lesson 2.7

2.7 Guided Practice (p. 117)

1. Piecewise functions are represented by a combination of equations. Step functions have a graphic representation that looks like a set of steps;

Piecewise:

$$f(x) = \begin{cases} 2x - 1, \text{ if } x \leq 1 \\ 3x + 1, \text{ if } x > 1 \end{cases}$$

Step function:

$$f(x) = \begin{cases} 1, \text{ if } 0 \leq x < 1 \\ 2, \text{ if } 1 \leq x < 2 \\ 3, \text{ if } 2 \leq x < 3 \\ 4, \text{ if } 3 \leq x < 4 \end{cases}$$

2. The point is included; the point is not included.

3. False; *Sample answer:* The separate pieces are graphs of different functions. The graphs don't have to be connected. For example, a step function is a piecewise function, but the steps of its graph are not connected.

4. True; in substituting $x = 1, 2, 3$ into the greatest integer function, the graphical representation is the same as the earlier step function.

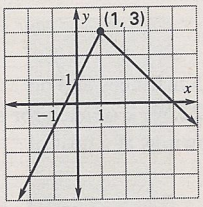
5. $f(10) = 2x + 7 = 20 + 7 = 27$

6. $f\left(-\frac{1}{3}\right) = 3\left(-\frac{1}{3}\right) - 1 = -1 - 1 = -2$

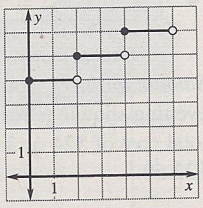
7. $f(4) = 3(4) - 1 = 12 - 1 = 11$

8. $f(-2) = 3(-2) - 1 = -6 - 1 = -7$

9.



10.



11. $f(x) = \begin{cases} -\frac{4}{3}x + 6, \text{ if } 0 \leq x < 3 \\ -\frac{2}{5}x + \frac{16}{5}, \text{ if } 3 \leq x \leq 8 \end{cases}$