2.4 Mixed Review (p. 98)

71. $|x - 10| = 17$

$x - 10 = -17$ or $x - 10 = 17$

$x = -7$ or $x = 27$

72. $|7 - 2x| = 5$

$7 - 2x = -5$ or $7 - 2x = 5$

$-2x = -12$ or $-2x = -2$

$x = 6$ or $x = 1$

73. $|-x - 9| = 1$

$-x - 9 = -1$ or $-x - 9 = 1$

$-x = 8$ or $-x = 10$

$x = -8$ or $x = -10$

74. $|4x + 1| = 0.5$

$4x + 1 = -0.5$ or $4x + 1 = 0.5$

$4x = -1.5$ or $4x = -\frac{1}{2}$

$x = -\frac{3}{8}$ or $x = -\frac{1}{8}$

75. $|22x + 6| = 9.2$

$22x + 6 = -9.2$ or $22x + 6 = 9.2$

$22x = -15\frac{1}{5}$ or $22x = 3\frac{1}{5}$

$x = -\frac{38}{55}$ or $x = \frac{8}{55}$

76. $|5.2x + 7| = 3.8$

$5.2x + 7 = -3.8$ or $5.2x + 7 = 3.8$

$5.2x = -10\frac{4}{5}$ or $5.2x = -\frac{16}{5}$

$x = \frac{-27}{13} \approx -2.08$ or $x = \frac{-8}{13} \approx -0.615$

77. $m = \dfrac{7 + 7}{2 - 1} = \dfrac{14}{1} = 14$ **78.** $m = \dfrac{-4 + 1}{-5 + 1} = \dfrac{-3}{-4} = \dfrac{3}{4}$

79. $m = \dfrac{10 - 4}{5 - 2} = \dfrac{6}{3} = 2$ **80.** $m = \dfrac{-1 + 2}{-3 - 5} = -\dfrac{1}{8}$

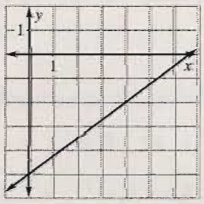
81. $m = \dfrac{4 - 4}{2 + 2} = \dfrac{0}{4} = 0$ **82.** $m = \dfrac{4 + 1}{-5 + 4} = \dfrac{3}{-9} = -\dfrac{1}{3}$

83. $m = \dfrac{10 + 8}{-9 + 0} = \dfrac{18}{-9} = -2$

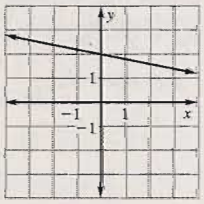
84. $m = \dfrac{5 - 11}{-6 - 6} = -\dfrac{17}{0}$; undefined

85. $m = \dfrac{11 - 4}{-4 + 11} = \dfrac{7}{7} = 1$

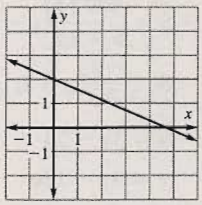
86.



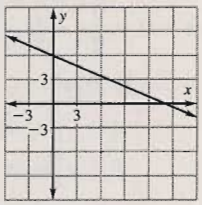
87.



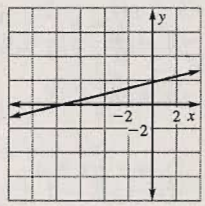
88.



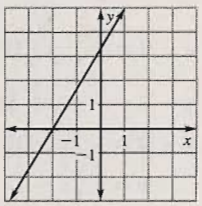
89.



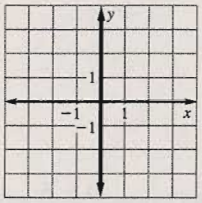
90.



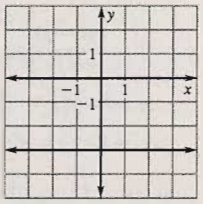
91.



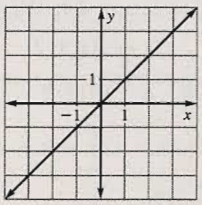
92.



93.



94.



Developing Concepts Activity 2.5 (p. 99)

Good responses to the 4 steps and 6 exercises should include all of these:

- a complete table with 10 different data points
- an accurate scatter plot of the data
- a reasonable guess of the best-fitting line
- correct calculation of slope and y-intercept, with a correct equation
- correct use of model to predict y for $x = 300$ cm
- an actual measurement to check prediction

Lesson 2.5

2.5 Guided Practice (p. 103)

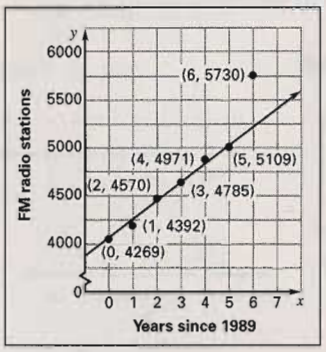
1. Positive correlation occurs if y-tends to increase as x-increases. A negative correlation occurs if y tends to decrease as x increases. Relatively no correlation occurs if the points show no linear pattern.
2. *Sample answer:* A positive correlation; taller men tend to have larger feet.
3. *Sample answer:* Two data points lie on the line and all the rest are above the line. There should be about as many data points below the line as there are above.

4. A positive correlation; the y-values tend to increase as the x-values increase.

5. $y = 0.25(4) + 0.375$

$y = 1.375$ m

6.



Sample answer:

Points (2, 4570) and (4, 4971)

$y - 4971 = \frac{4971 - 4570}{4 - 2}(x - 4)$

$y = 200.5x + 4169$

7. $y = 200.5(21) + 4169$

$y = 8379.5$

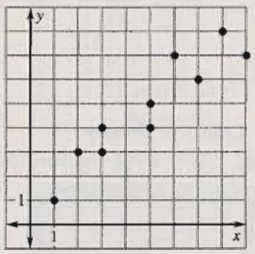
about 8380 stations

2.5 Practice and Applications (pp. 103–105)

8. negative correlation **9.** positive correlation

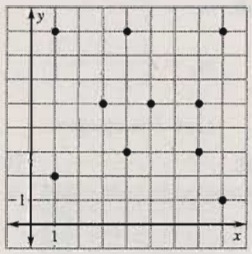
10. relatively no correlation

11.



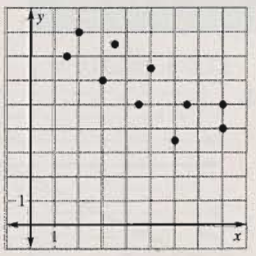
positive correlation

12.



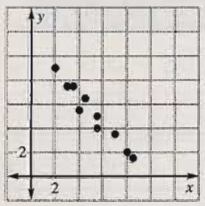
relatively no correlation

13.



negative correlation

14.

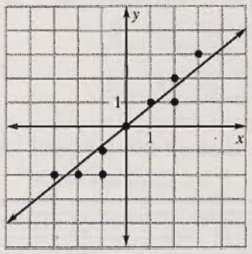


negative correlation

15. *Sample answer:* List the data points so that the values of x are in increasing order. If the y-values mostly increase along with the x-values, there is a positive correlation. If the y-values decrease as the x-values increase, there is a negative correlation. Otherwise, there is relatively no correlation.

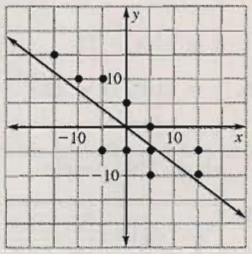
16–21 Sample answers are given.

16.



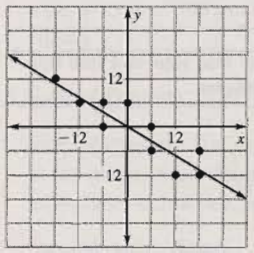
$y = 0.88x - 0.1$

17.



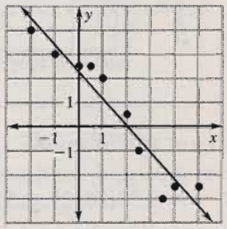
$y = -0.86x - 0.05$

18.



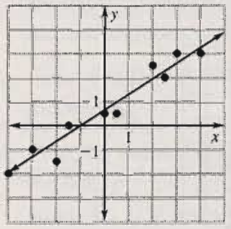
$y = -0.65x + 0.13$

19.



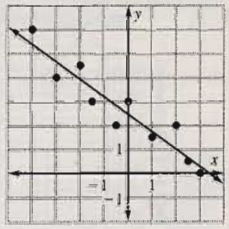
$y = -1.11x + 2.27$

20.



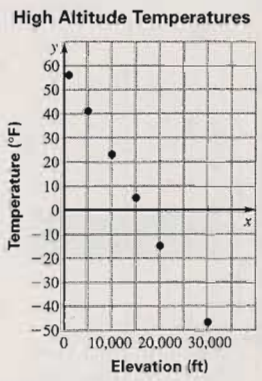
$y = 0.66x + 0.6$

21.



$y = -0.73x + 2.47$

22.

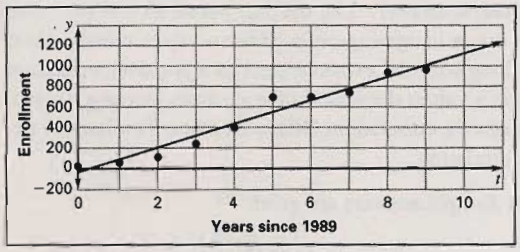


negative correlation

23.

positive correlation

24.



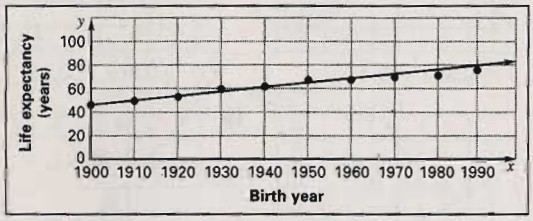
$y = 110t - 22$

25. $y = 110(21) - 22$

$y = 2288$

about 2290 people

26.



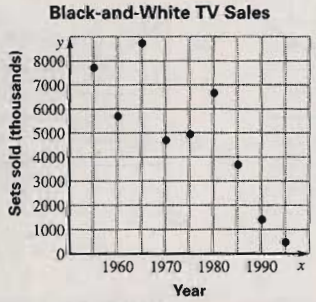
$y = 0.325x - 571$

27. $y = 0.33(2010) - 571$

$y = 92.3$

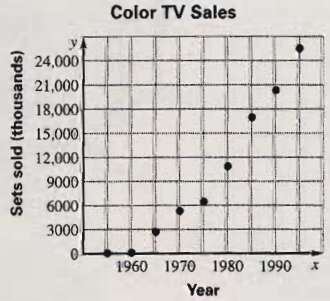
about 92 years

28. a.



negative correlation

b.



positive correlation

c. Negatively correlated; as sales of color TVs increased, the sales of black-and-white TVs decreased.

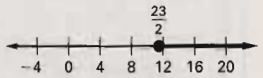
29. *Sample answer:* One possibility would be the way the price of a gallon of gas varies over time, since the fluctuations in the price are so erratic and cannot be predicted. Another possibility would be the sales of some new technology that showed up on the scene and then died out very quickly when it was replaced by something else.

2.5 Mixed Review (p. 106)

30. $2x - 9 \geq 14$

$2x \geq 23$

$x \geq \frac{23}{2}$

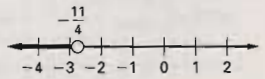


31. $3(x + 7) < -x + 10$

$3x + 21 < -x + 10$

$4x < -11$

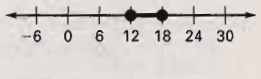
$x < -\frac{11}{4}$



32. $17 \leq 2x - 7 \leq 29$

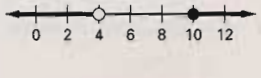
$24 \leq 2x \leq 36$

$12 \leq x \leq 18$



33. $x - 4 < 0$ or $x - 6 \geq 4$

$x < 4$ or $x \geq 10$



34. $m_1 = \frac{6 - 4}{1 + 3} = \frac{2}{4} = \frac{1}{2}$

$m_2 = \frac{2 + 5}{6 - 1} = \frac{7}{5}$;

Line 2 is steeper.

35. $m_1 = \frac{4 - 1}{-4 - 6} = -\frac{3}{10}$

$m_2 = \frac{-6 - 3}{1 + 2} = -\frac{9}{3} = -3$;

Line 2 is steeper.

36. $m_1 = \frac{4 - 7}{2 - 1} = -3$

$m_2 = \frac{8 - 8}{3 + 5} = \frac{0}{8}$;

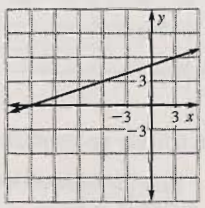
Line 1 is steeper.

37. $m_1 = \frac{-9 - 3}{1 - 4} = \frac{-12}{-3} = 4$

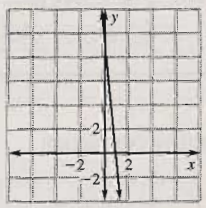
$m_2 = \frac{-7 + 4}{3 + 2} = -\frac{3}{5}$;

Line 1 is steeper.

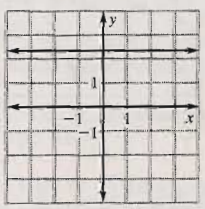
38.



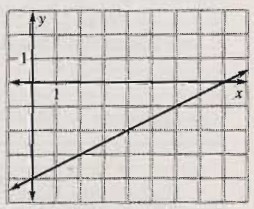
39.



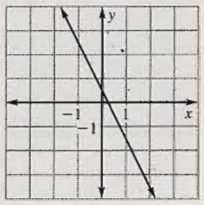
40.



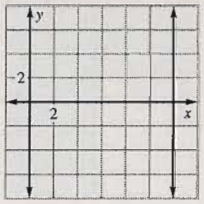
41.



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

$m_2 = 2$

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

$y + 2 = 2x - 2$

$y = 2x - 4$

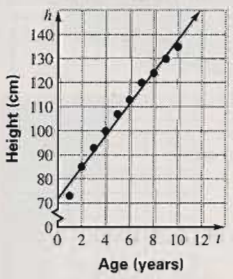
5. relatively no correlation **6.** negative correlation

7. positive correlation **8.** $d = 1.3h$

$5.2 = 1.3h$

$4 \text{ ft} = h$

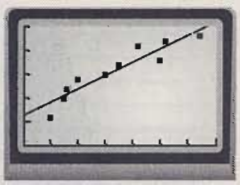
9.



$h = 6.63t + 71.5$

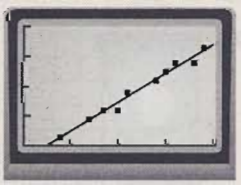
Technology Activity 2.5 (page 107)

1.



$y = 0.0028x + 0.32$

2.

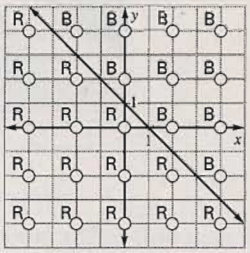


$y = 97.8x - 247.8$

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)

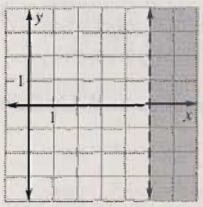
1. *Sample answer:* The graph of a linear equation is a line in the plane, while the graph of a linear inequality is a half-plane with a line as its boundary.

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 $Ax + By < C$.

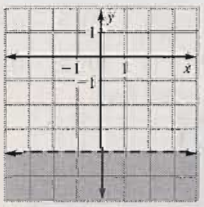
3. False; $(3)\left(\frac{4}{3}\right) - 0 = 4$, so $\left(\frac{4}{3}, 0\right)$ is not a solution of the inequality.

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.

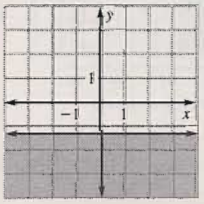


6.



7.

8.



9.