4 Chapter Test

Write an equation in slope-intercept form of the line with the given characteristics.

1. slope $= \frac{2}{5}$; y-intercept $= -7$

2. passes through $(0, 6)$ and $(3, -3)$

3. parallel to the line $y = 3x - 1$; passes through $(-2, -8)$

4. parallel to the line $y = \frac{2}{3}$; passes through $(-4, 12)$

5. perpendicular to the line $y = \frac{1}{4}x - 9$; passes through $(1, 1)$

Write an equation in point-slope form of the line with the given characteristics.

6. slope $= 10$; passes through $(6, 2)$

7. passes through $(-3, 2)$ and $(6, -1)$

8. The first row of an auditorium has 42 seats. Each row after the first has three more seats than the row before it.

a. Find the number of seats in Row 25.

b. Which row has 90 seats?

9. The vertices of a quadrilateral are $J(1, 7)$, $K(6, 4)$, $L(2, -6)$, and $M(-3, -3)$. Is quadrilateral $JKLM$ a parallelogram? a rectangle? Explain.

10. The table shows the amount x (in dollars) spent on advertising for a neighborhood festival and the attendance y of the festival for several years.

Advertising (dollars), *x*	500	1000	1500	2000	2500	3000	3500	4000
Yearly attendance, *y*	400	550	550	800	650	800	1050	1100

a. Make a scatter plot of the data. Describe the correlation.

b. Write an equation that models the attendance as a function of the amount spent on advertising.

c. Interpret the slope and y-intercept of the line of fit.

11. Consider the data in the table in Exercise 10.

a. Use a graphing calculator to find an equation of the line of best fit.

b. Identify and interpret the correlation coefficient.

c. What would you expect the scatter plot of the residuals to look like?

d. Is there a causal relationship in the data? Explain your reasoning.

e. Predict the amount that must be spent on advertising to get 2000 people to attend the festival.

12. Let a, b, c, and d be constants. Determine which of the lines, if any, are parallel or perpendicular. Explain.

Line 1: $y - c = ax$ Line 2: $ay = -x - b$ Line 3: $ax + y = d$

13. Write a linear function h with the values $h(2.5) = -1$ and $h(3) = -6$.