16.5 EXERCISES

PRACTICE

In Exercises 1–4, **a.** find the equation of the regression line for the given points, and **b.** draw the scatter diagram and graph the regression line.

1. (0, 3), (1, 5), (2, 7), (3, 8), (5, 9), (6, 9)

2. (1, 10), (2, 8), (3, 7), (4, 6), (5, 5), (6, 5), (7, 4)

3. (1, 9.6), (2, 8.7), (3, 7.7), (4, 6.1), (5, 5.0)

4. (1, 5.2), (2, 6.4), (3, 8.1), (4, 9.2), (5, 10.6)

In Exercises 5–10, find the equation of the regression line for the given points.

5. (10, 6.5), (20, 5.8), (30, 5.6), (40, 3.1), (50, 1.8)

6. (1, 0.2), (2, 0.4), (3, 0.3), (4, 0.6), (5, 0.6)

7. (1, 236), (2, 248), (3, 270), (4, 285), (5, 291)

8. (1, 0.45), (3, 0.71), (4, 0.82), (5, 0.94)

9. (0.6, 4.8), (0.8, 5.0), (1.0, 4.8), (1.2, 5.2), (1.4, 5.8)

10. (3.2, 0.10), (4.1, 0.15), (4.8, 0.20), (5.1, 0.23), (6.0, 0.29)

APPLICATIONS

11. Advertising budget: During the last 5 years, the advertising manager for a corporation has gathered the following data that shows the relationship between the advertising budget (in millions of dollars) and the total sales (in thousands of units).

Advertising Budget (x) (in millions)	$4.5	$6.5	$3.5	$3.2	$2.6
Sales (y) (in thousands)	37	46	42	32	29

a. Find the regression line for the data.
b. Estimate the sales if $4 million is budgeted for advertising.

12. Price: Records at a company for the last 5 years show the following relationship between the units sold (in thousands) and the price of a product.

Price (p)	$8.80	$8.00	$7.50	$6.90	$6.20
Quantity Sold (x) (in thousands)	3.8	5.2	7.3	8.0	9.6

a. Find the regression line for the price in terms of units.
b. Estimate the price that should be charged in order to sell 10,000 units.

13. Construction: The following data shows the amount spent on office building construction (in thousands) for a particular county during a six-month period.

Month	Apr	May	June	July	Aug	Sept
Amount (in thousands)	$24	$19	$30	$49	$68	$69

a. Find the regression line for the data.
b. Estimate the amount spent in October.

14. Revenue: The annual revenue (in millions of dollars) for a corporation is given in the following table.

Year	1999	2000	2001	2002	2003	2004
Revenue (in millions)	$66	$82	$127	$201	$310	$392

a. Find the line of regression for the data.
b. Estimate the revenue for 2005.

15. Livestock futures: The price of livestock futures is the estimated market price of livestock on the delivery date (end of the indicated month). The cattle futures (in cents per pound) for the months February through July are as follows.

Month	Feb	Mar	Apr	May	June	July
Price (¢ per pound)	79.10	76.02	71.80	71.45	71.45	72.50

a. Find the line of regression for the data.
b. Estimate the price for August.

16. Tourism: The total number of foreign tourists visiting the United States, as reported by the U.S. Travel and Tourism Administration, is shown in the following table.

Year (x)	2000	2001	2002	2003	2004
Tourists (y) (in millions)	25.7	26.3	29.7	34.2	38.3

a. Find the regression line for the data.
b. Estimate the number of foreign tourists that visited the United States in 2005.