

4.4 Exercises

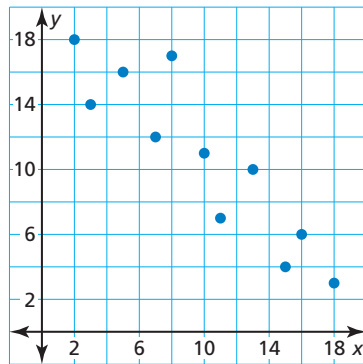
Vocabulary and Core Concept Check

- COMPLETE THE SENTENCE** When data show a positive correlation, the dependent variable tends to _____ as the independent variable increases.
- VOCABULARY** What is a line of fit?

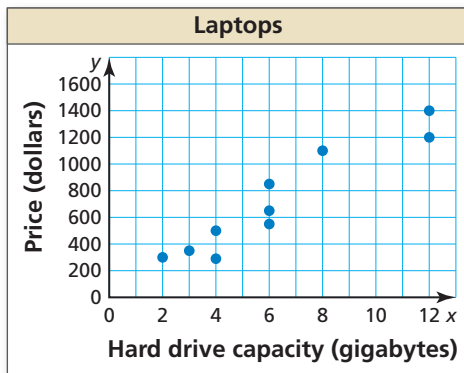
Monitoring Progress and Modeling with Mathematics

In Exercises 3–6, use the scatter plot to fill in the missing coordinate of the ordered pair.

- (16,)
- (3,)
- (, 12)
- (, 17)

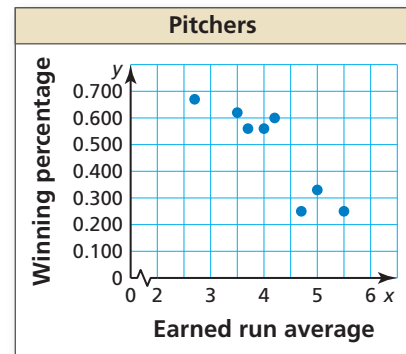


- INTERPRETING A SCATTER PLOT** The scatter plot shows the hard drive capacities (in gigabytes) and the prices (in dollars) of 10 laptops. (See Example 1.)



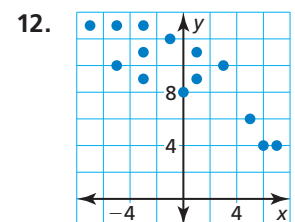
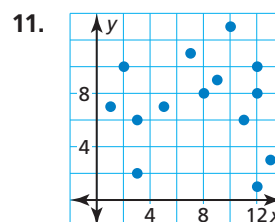
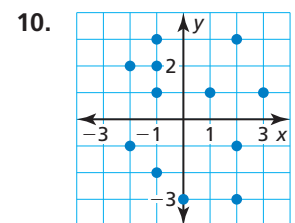
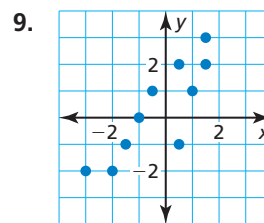
- What is the price of the laptop with a hard drive capacity of 8 gigabytes?
- What is the hard drive capacity of the \$1200 laptop?
- What tends to happen to the price as the hard drive capacity increases?

- INTERPRETING A SCATTER PLOT** The scatter plot shows the earned run averages and the winning percentages of eight pitchers on a baseball team.



- What is the winning percentage of the pitcher with an earned run average of 4.2?
- What is the earned run average of the pitcher with a winning percentage of 0.33?
- What tends to happen to the winning percentage as the earned run average increases?

In Exercises 9–12, tell whether x and y show a *positive*, a *negative*, or *no* correlation. (See Example 2.)



In Exercises 13 and 14, make a scatter plot of the data. Tell whether x and y show a *positive*, a *negative*, or *no* correlation.

13.

x	3.1	2.2	2.5	3.7	3.9	1.5	2.7	2.0
y	1	0	1	2	0	2	3	2

14.

x	3	4	5	6	7	8	9	10
y	67	67	50	33	25	21	19	4

15. **MODELING WITH MATHEMATICS** The table shows the world birth rates y (number of births per 1000 people) x years since 1960. (See Example 3.)

x	0	10	20	30	40	50
y	35.4	33.6	28.3	27.0	22.4	20.0

- Write an equation that models the birthrate as a function of the number of years since 1960.
- Interpret the slope and y -intercept of the line of fit.

16. **MODELING WITH MATHEMATICS** The table shows the total earnings y (in dollars) of a food server who works x hours.

x	0	1	2	3	4	5	6
y	0	18	40	62	77	85	113

- Write an equation that models the server's earnings as a function of the number of hours the server works.
 - Interpret the slope and y -intercept of the line of fit.
17. **OPEN-ENDED** Give an example of a real-life data set that shows a negative correlation.
18. **MAKING AN ARGUMENT** Your friend says that the data in the table show a negative correlation because the dependent variable y is decreasing. Is your friend correct? Explain.

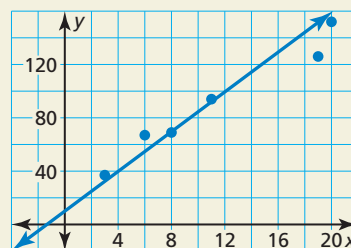
x	14	12	10	8	6	4	2
y	4	1	0	-1	-2	-4	-5

19. **USING TOOLS** Use a ruler or a yardstick to find the heights and arm spans of five people.
- Make a scatter plot using the data you collected. Then draw a line of fit for the data.
 - Interpret the slope and y -intercept of the line of fit.

20. **THOUGHT PROVOKING** A line of fit for a scatter plot is given by the equation $y = 5x + 20$. Describe a real-life data set that could be represented by the scatter plot.

21. **WRITING** When is data best displayed in a scatter plot, rather than another type of display, such as a bar graph or circle graph?

22. **HOW DO YOU SEE IT?** The scatter plot shows part of a data set and a line of fit for the data set. Four data points are missing. Choose possible coordinates for these data points.



23. **REASONING** A data set has no correlation. Is it possible to find a line of fit for the data? Explain.
24. **ANALYZING RELATIONSHIPS** Make a scatter plot of the data in the tables. Describe the relationship between the variables. Is it possible to fit a line to the data? If so, write an equation of the line. If not, explain why.

x	-12	-9	-7	-4	-3	-1
y	150	76	50	15	10	1

x	2	5	6	7	9	15
y	5	22	37	52	90	226

Maintaining Mathematical Proficiency

Reviewing what you learned in previous grades and lessons

Evaluate the function when $x = -3, 0,$ and 4 . (Section 3.3)

25. $g(x) = 6x$

26. $h(x) = -10x$

27. $f(x) = 5x - 8$

28. $v(x) = 14 - 3x$