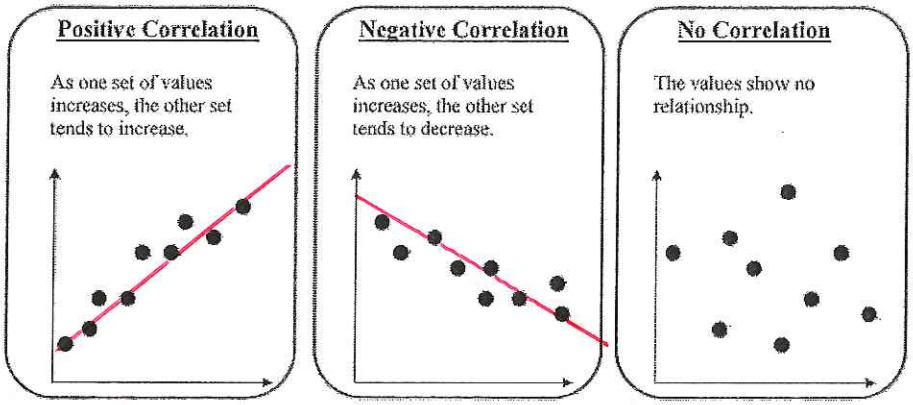
NAME _____ DATE _____ PERIOD _____ Key

4-5 Notes

Scatter Plots and Lines of Fit

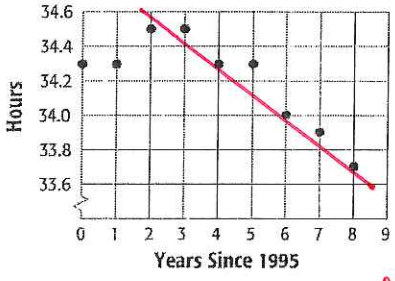
Investigate Relationships Using Scatter Plots A **scatter plot** is a graph in which two sets of data are plotted as ordered pairs in a coordinate plane. If y increases as x increases, there is a **positive correlation** between x and y. If y decreases as x increases, there is a **negative correlation** between x and y. If x and y are not related, there is **no correlation**.



Exercises

Determine whether each graph shows a *positive correlation*, a *negative correlation*, or *no correlation*. If there is a positive or negative correlation, describe its meaning in the situation.

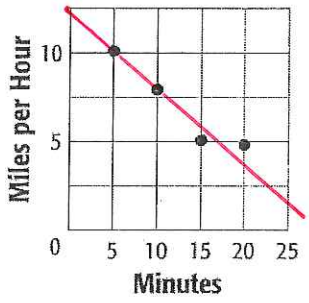
1. **Average Weekly Work Hours in U.S.**



Source: *The World Almanac*

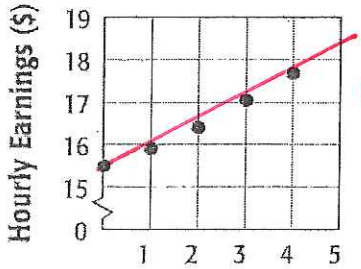
negative correlation
As years increased, hours decreased.

2. **Average Jogging Speed**



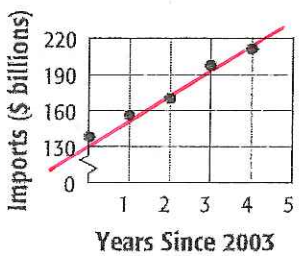
negative correlation
As time spent running increases, speed decreases

3. **Average U.S. Hourly Earnings**



positive correlation
As years increase, wages increase.

4. **U.S. Imports from Mexico**



positive correlation - as years increase, the amount of imports increase

NAME _____ DATE _____ PERIOD _____

4-5 Notes *(continued)*

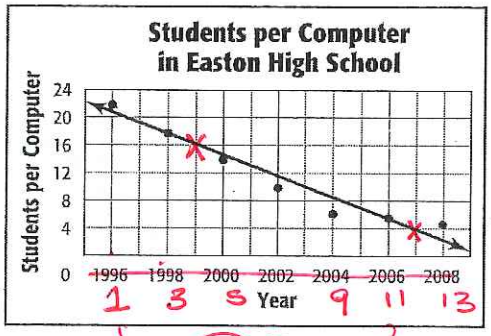
Scatter Plots and Lines of Fit

Use Lines of Fit

Example: The table shows the number of students per computer in Easton High School for certain school years from 1996 to 2008.

Year (1995)	1996	1998	2000	2002	2004	2006	2008
	0	1	3	5	7	9	11	13
Students per Computer	22	18	14	10	6.1	5.4	4.9

a. Draw a scatter plot and determine what relationship exists, if any.



years since 1995

b. Draw a line of fit for the scatter plot.

c. Write the slope-intercept form of an equation for the line of fit.

(4, 16)
(12, 4)

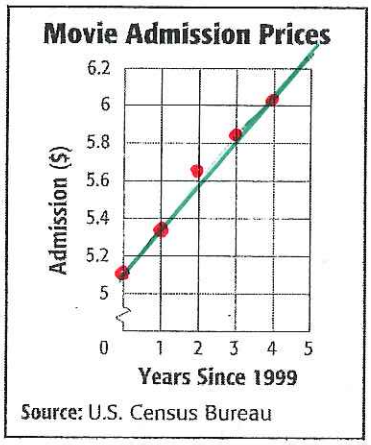
$m = \frac{16-4}{4-12} = \frac{12}{-8} = -1.5$

$y - y_1 = m(x - x_1)$
$y - 4 = -1.5(x - 12)$
$y - 4 = -1.5x + 18$
$+4 \quad +4$
$y = -1.5x + 22$

Exercises

Refer to the table for Exercises 1-3.

1. Draw a scatter plot.
2. Draw a line of fit for the data.
3. Write the slope-intercept form of an equation for the line of fit.



Years Since 1999	Admission (dollars)
0	$5.08
1	$5.39
2	$5.66
3	$5.81
4	$6.03

(0, 5.08)
(4, 6.03)

$m = \frac{5.08 - 6.03}{0 - 4}$

$m = \frac{-.95}{-4}$

$m = 0.24$

$y - 5.08 = 0.24(x - 0)$
$y - 5.08 = 0.24x \quad +5.08$
$+5.08$
$y = 0.24x + 5.08$