

Challenge: Skills and Applications

For use with pages 292–298

In Exercises 1–4, state whether the two variables have a *positive correlation*, a *negative correlation*, or *no correlation*. Explain.

1. an individual teacher's years of experience and salary
2. shoe size and scores on college admission tests
3. weeks on a successful weight-loss plan and a person's weight
4. time spent training and distance a person can run

In Exercises 5–6, use the information in the table.

<i>Year born</i>	1920	1930	1940	1950	1960	1970	1980	1990
<i>Expected years of life</i>	54.1	59.7	62.9	68.2	69.7	70.8	73.7	75.4

5. Let x equal the number of years since 1900. Use a scatter plot to find an equation of the line that you think best fits the data.
6. Use the equation from Exercise 5 to estimate the expected years of life for someone born in the year 2000.

In Exercises 7–11, use the table which shows the U.S. labor force, excluding agricultural, self-employed, and unemployed workers.

<i>Year</i>	1930	1940	1950	1960	1970	1980	1990
<i>Workers (millions)</i>	29.4	32.3	45.2	54.2	70.9	90.6	103.9

7. Let x equal the number of years since 1900. Use the scatter plot to find an equation of the line that you think best fits the data.
8. How many pairs of points can be formed from the 7 data points in the table? For example, one pair consists of the 1930 and 1970 data points and another pair consists of the 1960 and 1970 data points.
9. A line can be drawn through any pair of points. Find the slope of the line through each pair of points you counted in Exercise 8. Round to the nearest hundredth.
10. Find the mean of all the slopes you listed in Exercise 9.
11. How does the mean you found in Exercise 10 compare to the slope of the line of best fit you found in Exercise 7?