1. After conducting a survey of his students, a professor reported that "There appears to be a strong correlation between grade point average and whether or not a student works." Comment on this observation.

2. The following scatterplot shows a relationship between x and y that results in a correlation coefficient of $r = 0$. Explain why $r = 0$ in this situation even though there appears to be a strong relationship between the x and y variables.

Scatterplot of y vs x
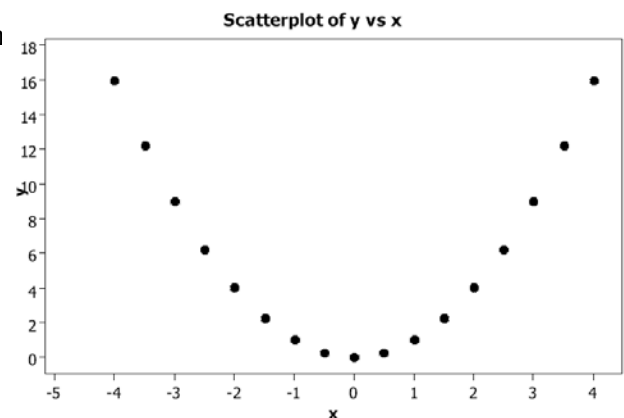
3. The following scatterplot shows the relationship between the time (in seconds) it took men to run the 1500m race for the gold medal and the year of the Olympics that the race was run in.

    a. Write a few sentences describing the association.

Scatterplot of Time vs Year
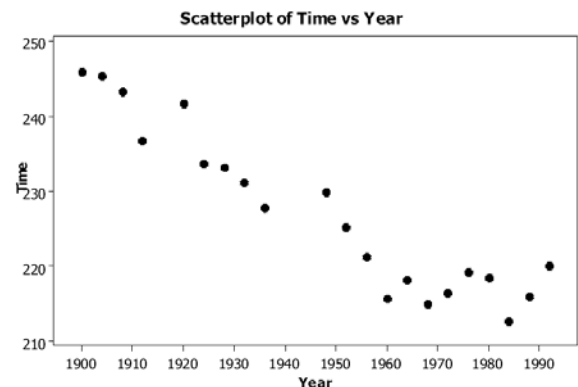
    b. Estimate the correlation.

4. Identify what is wrong with each of the following statements.
    a. The correlation between Olympic gold medal times for the 800m hurdles and the year is –0.66 seconds per year.

b. The correlation between Olympic gold medal times for the 100m dash and year is –1.37.

c. Since the correlation between Olympic gold medal times and the 800m hurdles and 100m dash is –0.41, the correlation between times for the 100m dash and the 800m hurdles is +0.41.

d. If we were to measure Olympic gold medal times for the 800m hurdles in minutes instead of seconds, the correlation would be –0.66 / 60 = -0.011.

5. On the axes below, sketch a scatterplot describing…
    a. a strong positive association   **b.** a weak negative association

6. A study by a prominent psychologist found a moderately strong positive association between the number of hours of sleep a person gets and the person's ability to memorize information.
    a. Explain in the context of this problem, what "positive association" means.

    b. Hoping to improve academic performance, the psychologist recommended the school board allow students to take a nap prior to any assessment. Discuss the psychologist's recommendation.