Homework 3 Chapters 8 and 9

Due on March 3

Math 125 *Kovitz* Spring 2025

The key problems on this assignment are problems 1, and 4.

1. Find the correlation coefficient for the data set below.

x	y
1	3
2	2
3	4
4	6
5	1
6	5
7	7

2. Suppose women always married men who were exactly 3 years older. What would the correlation between their ages be?

3. True or false, and explain briefly.

   (a) If the correlation coefficient is -0.80, below-average values of the dependent variable are associated with below-average values of the independent variable.

   (b) If y is usually less than x, the correclation coefficient between x and y will be negative.

4. Suppose that the correlation between weight (in pounds) and years of schooling completed is about -0.10. True or false and explain:

   (a) Heavier persons tend to be less educated.

   (b) Persons with more education tend to weigh more.

   (c) The correlation between years of schooling completed and weight (in pounds) is about -0.10.

   (d) The correlation between weight (in kilograms) and years of schooling completed will not be about -0.10.

   (e) Lighter persons tend to be less educated.

   (f) If you diet and lose 25 pounds, you will become more educated.

5. For women age 25 and over in the U.S. in 2005, the relationship between age and educational level (years of schooling completed) can be summarized as follows.

   $$\text{average age} \approx 50 \text{ years}, \quad \text{SD} \approx 16 \text{ years}$$
   $$\text{average ed. level} \approx 13.2 \text{ years}, \quad \text{SD} \approx 3.0 \text{ years}, \quad r \approx -0.20$$

   True or false, and explain: as you get older, you become less educated. If this statement is false, what accounts for the negative correlation?