

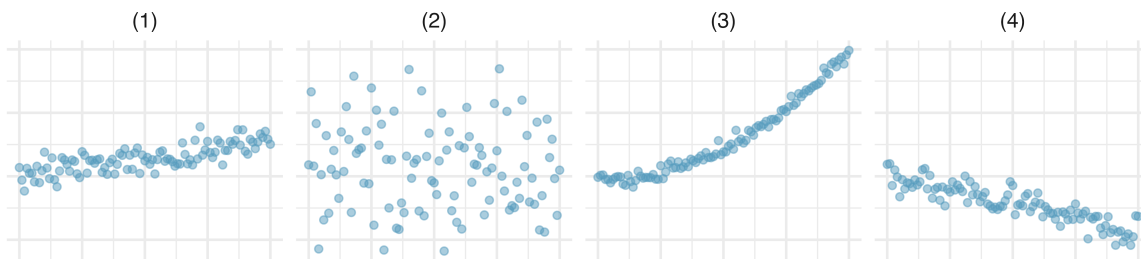
Numerical data (part 1)

Practice problems

9/16/24

Please work on the practice problems in your group. Problems with an asterisk * will be assigned to the weekly problem set.

1. Indicate which of the plots show a positive association, negative association, or no association. Also determine if the positive and negative associations are linear or nonlinear.



2. A list has 10 entries, and each entry is either a 1, 2, or 3. What must the list be if the average is 3? Give examples of values that the average *cannot* be.
3. Suppose someone tells you that they have some data where the standard deviation is 10,000. What does this tell you about your data, if anything?
4. * Consider the following two sets of data:

$$\mathbf{x} = (1, 3, 4, 5, 7)$$

$$\mathbf{y} = (6, 8, 9, 10, 12)$$

- a. For each set, find the average and the standard deviation. Show your work by writing out the calculations explicitly. Please use the proper symbols/notation!
 - b. How is the set of data \mathbf{y} related to \mathbf{x} ? How does this relationship carry over/affect the average and the standard deviation of \mathbf{y} in comparison to those of \mathbf{x} ?
5. * Calculate the sample mean in each of the following scenarios:
 - a. Suppose that we have some data where 20% of the data are 1's, 50% are 2's, and 30% are 3's. What is the sample mean?
 - b. A school has two classes, one with 10 students and one with 100 students. What is the average class size?
 - c. A school has two classes, one with 10 students and one with 100 students. What is the average size of the class that a student is enrolled in?