

Name: _____

Directions: This exam contains seven problems worth a total of 100 points. For each computational problem, you must first write the formula to be used and present all your subsequent work in order to receive full or partial credit. Circle your final answers.

1. For each of the following, determine whether the data are discrete or continuous. (4 pts. ea.)
 - (a) Amounts of rainfall (in millimeters) _____
 - (b) Numbers of students in classrooms _____
 - (c) Salaries of people (in dollars) _____
 - (d) Last four digits of Social Security Numbers _____

2. Using the values $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, create a data set with four observations
 - (a) that has the largest possible variance. Is this solution unique? (8 pts.)

 - (b) that has the smallest possible variance. Is this solution unique? (8 pts.)

For both (a) and (b), you may repeat the same values.

3. The following are numbers of tooth fillings for a sample of six children.

$$X: \{2, 0, 1, 3, 0, 3\}$$

- (a) Compute the mean number of tooth fillings. (8 pts.)

- (b) Compute the standard deviation of the number of tooth fillings. (8 pts.)

4. Thirty volunteers participated in a taste-preference study. In the study, each volunteer tasted Coke, Pepsi, and generic cola and picked the one that he or she liked the best. The results were that 10 volunteers preferred Coke, 13 preferred Pepsi, and 7 preferred the generic cola.
- For the variable “brand of soda,” construct a bar chart. Use the original frequency for the y -axis and indicate some ticks. (8 pts.)
 - For the same variable, construct a pie chart. (8 pts.)
5. For randomly selected 150 college professors at a large university, commuting times showed a mean of 11.29 minutes with a standard deviation of 3.31. The median commuting time was 9.42 minutes.
- What do the relative locations of the mean and median tell you about the skewness of the data? (8 pts.)
 - Interpret the value of the standard deviation ($s = 3.31$) in the context of the problem. (6 pts.)
6. Briefly, but clearly, describe an example of a study where there is a potential selection bias. (8 pts.)
7. A data set is presented in the following stem-and-leaf plot. Note that the stem width is 10 (so that the smallest number is 32 and the largest is 83).

Stem	Leaf
3	2
4	67
5	0
6	
7	449
8	3

- Compute the median of the data. (8 pts.)
- Are there any obvious outliers in the data? (6 pts.)