In-class Worksheet 3

The `1-Var Stats` function on your calculator can be very helpful with the computations in Chapter 3. If you have not already familiarized yourself with that function, you are encouraged to do so.

1. Shown here is a frequency table for scores on a MATH 1081 quiz.

Score	Frequency
5	1
6	4
7	5
8	6
9	12
10	25
11	20
12	52
13	54
14	74
15	87
16	66
17	71
18	44
19	26
20	19

(a) How many total students took this quiz?

(b) What is the mean score for this quiz?

(c) Looking at the distribution, do you expect the 5% trimmed mean to be higher or lower than the mean for the entire data set? Explain.

(d) Compute the 5% trimmed mean. (Did you get what you expected?)

(e) What is the median score for this quiz?

(f) What is the mode of the data?

2. Shown here is a histogram displaying the results of an employer survey asking the distance their employees commute to work each day. Because we do not have all the specific data values, we cannot precisely compute the mean. However, we can make an estimate of it.
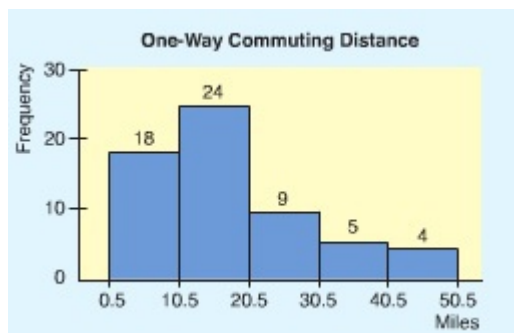
(a) We have no idea how the 24 values within the class boundaries 10.5-20.5 are distributed. However, if we wanted to estimate their approximate value to compute the mean, what value would be the best choice to represent those 24 values?

(b) Using this idea, estimate the mean commuting distance for the employees that answered the survey.

3. Consider two data sets.

$$\text{Set A: } n = 5, \ \bar{x} = 10 \hspace{4cm} \text{Set B: } n = 50; \ \bar{x} = 10$$

(a) Suppose the number 20 is included as an additional data value in Set A. Compute $\bar{x}$ for the new data set.

(b) Suppose the number 20 is included as an additional data value in Set B. Compute $\bar{x}$ for the new data set.

(c) Why did the addition of the number to each set change the mean more in one case than in the other?

4. A VERY common question from students towards the end of the semester is "What score do I need on the final exam to get a (fill in the blank) in the class?" For this class, this requires working with a weighted average. So, let's try this exercise for a sample student in this class.

   Here are the scores for the student going into the final exam:

   15% - Midterm 1 (out of 100) - 77;

   15% - Midterm 2 (out of 100) - 81;

   10% - Participation (average out of 100) - 100;

   10% - Reading Quizzes (average out of 100) - 98;

   10% - Chapter Reviews (each out of 100) - 100, 98, 87, 100, 92, 90, 83, 100, 100, 82 ;

   10% - Projects (each out of 100) - 82, 76;

   10% - Quizzes (each out of 10) - 5, 8, 7.5, 10, 8, 6, 8, 10, 7, 6.5, 7, 6; (where the lowest two will be dropped)

   (a) What is the weighted average for this student for all scores except the final?

   (b) What is the minimum score that the student can earn on the final exam to earn a grade of 'B-' or better? (Assume that a student must earn an 80% or higher overall (NO rounding up) in the course to earn an 'B-'.)

   (c) (Challenge!) What is the minimum score that the student can earn on the final exam to earn a grade of 'A-' or better? (Assume that a student must earn an 90% or higher overall (NO rounding up) in the course to earn an 'A-'.) Don't forget about the midterm replacement policy!