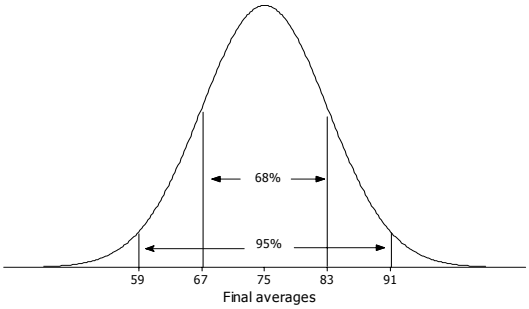
Statistics 13V Fall 2006 NAME:_____
Quiz 2 KEY Last six digits of Student ID#:_____

For multiple choice questions circle the best answer. For other questions provide the information requested.

1. A Statistics professor has taught many thousands of students, and has found that the student averages at the end of the quarter (based on all homework and exam scores) have approximately a bell-shaped distribution with mean of 75 and standard deviation of 8. Draw a picture of the distribution of student averages for this professor and indicate the locations (including numerical values) of the mean, the interval that covers the middle 68% of the values and the interval that covers the middle 95% of the values.

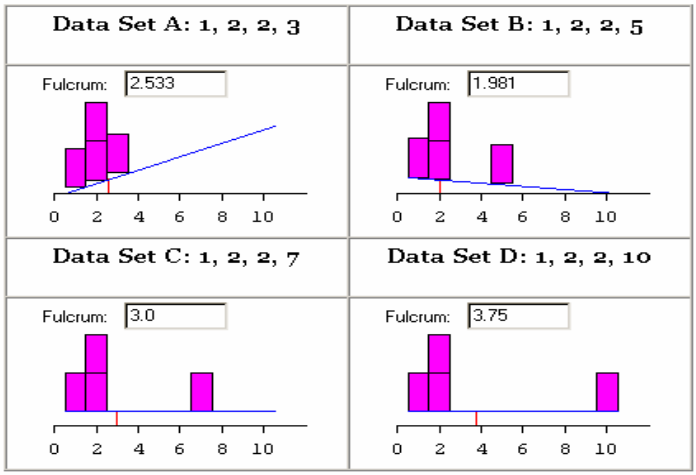


2. Refer to the previous question. What is the standardized score for a student who has an average of 91? About what percent of students have *higher* averages than this student? (*Hint:* Use your picture above.)

Standardized score = $\frac{91-75}{8} = \frac{16}{8} = 2$ Percent who are higher = _2.5%__

3. The screenshot below shows the interactivity from CyberStats Unit A6, Basics 3. Notice that the histogram is "balanced" on the fulcrum for the bottom two plots (at 3.0 and 3.75 for Data Sets C and D, respectively), but not the top two plots. At what values would the fulcrum be balanced for Data Sets A and B?
In general, the picture will balance on the mean of the data set. The data values are given.

For Data Set A: _*(1+2+2+3)/4 = **2***__ For Data Set B: *(1+2+2+5)/4 = **2.5***_



4. Write down a dataset that has five numbers in it, with a mean of 25 and a standard deviation of 0.
All values would be the same if the standard deviation is 0, so: 25, 25, 25, 25, 25

5. A researcher is studying romantic relationships among college students between the ages of 17 and 22. He gives a survey to a large class, which includes the question "What is the longest time you have been involved in a romantic relationship with someone? Answer in number of months." After the data were entered into the computer he saw that one of the data values was 250. Notice that 250 months is more than 20 years. The most likely conclusion about this value and the appropriate action is:
   A. It is a legitimate data value and represents naturally variability. Include it in the analysis of the data.
   B. It is clearly a mistake. He should see if an error was made when recording or entering the data.
   C. It is clearly a mistake. He should assume that the respondent didn't read carefully, and answered in number of days instead of number of months, so he should convert it to number of months.
   D. It is probably a legitimate data value but the respondent is not of traditional college age. Because the researcher is interested in students between the ages of 17 and 22, he should discard this value before analyzing the results.

6. Below is a stem-and-leaf plot for the times (in minutes) it took 15 students to finish an exam in a 50-minute class. Create a five-number summary for the data. (Put it to the right of the stem-and-leaf plot.)

```
|2|
|2| 89
|3| 12344
|3|
|4| 113
|4| 679
|5| 00
|5|
```

Median		41	
Quartiles	32		47
Extremes	28		50

7. The stem-and-leaf plot in Question #5 repeated each of the numbers 2 to 5 twice as stem values. In general, which of the following is *not* an allowable number of times to repeat numbers as stem values?
   A. 3 (Note that you must be able to divide the 10 possible digits for leaves evenly across stem values.)
   B. 5
   C. 10
   D. All of the above are allowable numbers of times to repeat numbers as stem values.

8. Which of the following is the *least* useful for determining the *shape* of quantitative data?
   A. Stem-and-leaf plot
   B. Boxplot
   C. Histogram
   D. All of the above are equally useful for determining the shape.

9. All of the following are true for bell-shaped data. Which *one* is true for highly skewed data as well?
   A. The mean and the median are about equal.
   B. The range is about 4 to 6 standard deviations.
   C. The range is larger than the interquartile range.
   D. The Empirical Rule can be used.

10. Which of the following is an example of a question about two quantitative variables?
   A. Do men and women have different average pulse rates?
   B. Do Democrats and Republicans differ in their opinions about capital punishment?
   C. Is there a relationship between age and hours per night adults sleep?
   D. Is there a relationship between favorite car color and fastest speed ever driven?