CSU101
Summer 2009
Lab Assignment S1

Note that this lab requires submitting an excel spreadsheet (for calculating a standard deviation) and a Word document (for the rest of the problems). You can attach both documents in Blackboard, by clicking the "Attach Another File" button after attaching the first, and then adding the second. Let me know if you have any questions/issues.

Standard Deviation:

Using Excel, create a spreadsheet that calculates the standard deviation of the following population of data. If the data were to change, your spreadsheet should calculate the appropriate answer for the new data. **Your answer should calculate the standard deviation only using the Excel built in functions SUM, COUNT and SQRT (don't use STDEVP, VARP, AVERAGE, etc).** However, you may add a cell to check your final answer using STDEVP.

72
71
76
67
73
65
68
66
70
67

Useful information:

- There are several statistics that are called "the average", including the mean and the median.
- The mean is the sum of a set of values divided by the number of values in that set.
- The variance is the mean of the squares of the differences between values and the mean of the values. (This is complicated statement, be sure you understand what it means – no pun intended)
- The standard deviation is the square root of the variance.

Reading Graphs:

Create a Word Document and add your answers to the following questions to that Word Document.

Here is a stem and leaf plot for a sample of grades from a class. Refer to this plot for the next questions.

```
X Stem-and-Leaf Plot

Frequency    Stem & Leaf
5.00          5  . 22679
9.00          6  . 123447889
16.00         7  . 0011145566777888
12.00         8  . 222334666699
17.00         9  . 00001112233456777
1.00         10  . 0

Stem width: 10
Each leaf: 1 case(s)
```
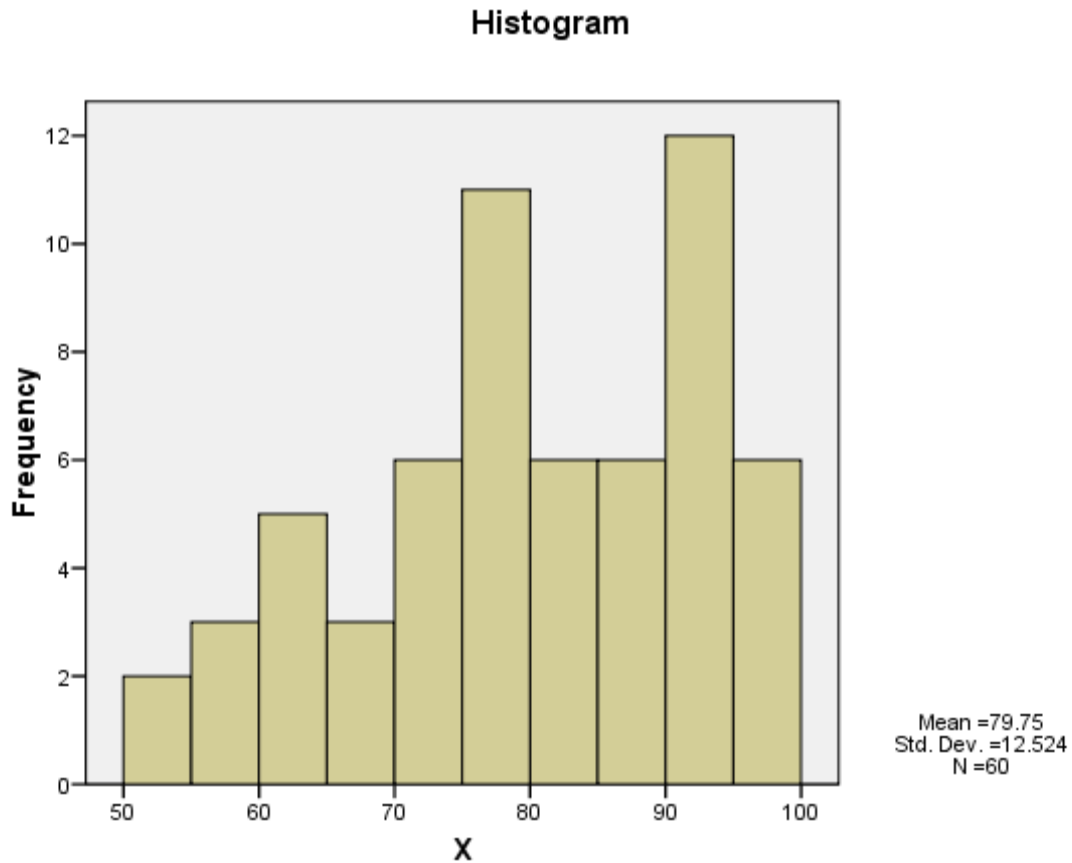
1. What is the lowest grade for which 20% of the grades are lower?

2. What is the highest grade for which 20% of the grades are higher?

3. What is the median of this sample?

4. If someone had a grade of 63, in which quartile would he be?

5. If someone had a grade of 89, in which quartile would he be?

6. What percent of the sample has a grade of 90 or better?

The following histogram shows the distribution of grades for a class of 60 individuals. Refer to this graph for the next questions. Assume that a bin contains all of the values including its floor up to but not including the floor of the next bin. **Refer to a bin by its range, e.g., 60-65.**

Histogram

Mean =79.75
Std. Dev. =12.524
N =60

7. What is the width of a bin in this histogram?

8. What is the total number of data values in the last five bins (i.e., from the right)?

9. Which bin contains the highest grade above which 25% of the population can be found?

10. Which bin contains the lowest grade below which 15% of the population can be found?

The following box plot represents grades received by students. Refer to this plot for the next questions. Refer to the quartile with the highest values as the top quartile or 4th quartile. Refer to the quartile containing the next highest values as the 3rd quartile etc.
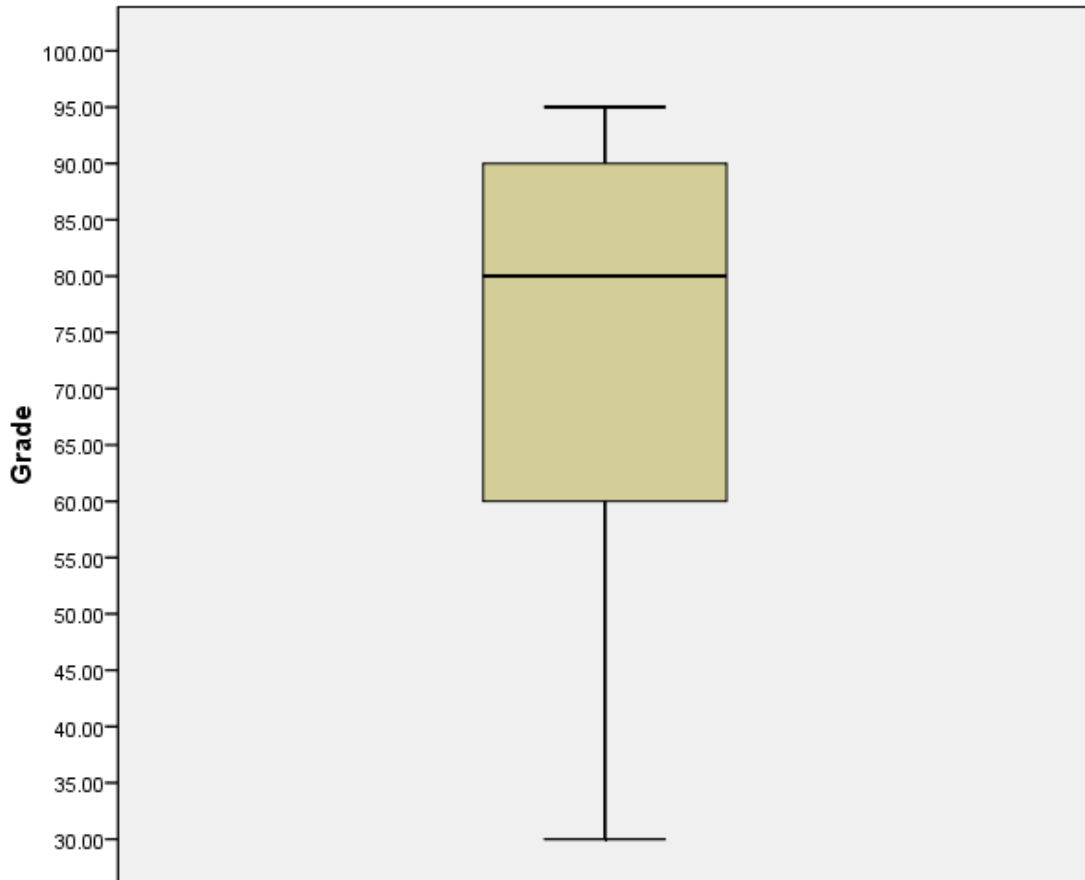
11. What is the median grade?

12. What is the lowest grade that a student might receive and still be within the highest (4th) quartile?

13. Which quartile has the most values?

14. Which quartile appears to have the largest range?