MATH 23 STATISTICS AND PROBABILITY FIRST TEST. FALL 2014

1. (5 points) Describe in your own words what is the objective of study of Statistics.

2. Given the set of data:

1	20	21	24	26	26	26	27	28
32	33	33	34	36	39	43	43	47

   (a) (5 points) Find the median Q_2.

   (b) (5 points) Find the mode M.

   (c) (5 points) Find the first and third quartiles Q_1 and Q_3.

   (d) (5 points) Find the interquartile range.

   (e) (5 points) What percent of the data is bellow Q_3?

   (f) (5 points) What portion of the data is in the interval between Q_1 and Q_3?

3. (25 points) Find the sample mean $\bar{x}$ and sample standard deviation s for the following set of sample data.

$$\{7, 8, 8, 9, 9, 11, 12, 13, 15\}$$

   Explain whether you consider the sample to be consistent or not with the mean.

4. The mean of the scores in a Statistics exam is 87.5 with standard deviation 3.2. Use Tchebychev Theorem to find:

   (a) (5 points) An interval that contains at least 75% of the data.

   (b) (5 points) An interval that contains at least 88.9% of the data.

5. The following table represents the results of the first quiz and the final exam on a sample of seven students of a Math Class at a college:

I quiz	50.7	50.5	70	69.8	98	78	98
Final	30.2	20.5	53.5	56	92.8	56	86

   (a) (10 points) Draw the scattered plot of the set of data.

   (b) (10 points) Based on the graph, would you estimate the correlation coefficient to be positive, negative or zero? Explain your answer.

   (c) (10 points) Compute the correlation coefficient is r and interpret your result.

Formulaes: $s = \sqrt{\frac{\sum x^2 - (\sum x)^2/n}{n-1}}$, $\quad \bar{x} = (\sum x)/n$, $\quad r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{n\sum x^2 - (\sum x)^2}\sqrt{n\sum y^2 - (\sum y)^2}}$.