

Name: _____
Fall 2014

MAT 221
Problem Set 3

Problem 1: Fill in the blank:

- (a) The five number summary consists of the _____, _____, _____, _____, and _____.
- (b) Bar charts are for _____ variables while box plots and histograms are for _____ variables.
- (c) You look for outliers by calculating _____ then looking for numbers less than _____ or numbers greater than _____.
- (d) If the mean is less than the median, then the distribution of data is _____ skewed.
- (e) The z -score measures how many _____ a data point is from the _____.
- (f) Scatterplots show the relationship between what kind of variables? _____

Problem 2: The scores on a university examination is normally distributed with mean 62 and standard deviation 11.

- (a) What proportion of the students scored at least 80?
- (b) What proportion of the students scored between 70 and 80?
- (c) If the top 5% of students are awarded a merit certificate, what is the lowest mark that a student can have and still be awarded a merit certificate?

Problem 3: There were 8 students in a class. The average grade (out of 100) of each student and her/his score on the final exam (out of 100) were recorded. The record is given below:

Observation #	1	2	3	4	5	6	7	8	Mean	StDev.
Quiz (x)	85	78	99	87	79	71	88	99	85.75	9.867
Final exam (y)	80	72	98	85	82	65	92	90	83	10.784

The correlation for a linear regression for this data was $r = 0.9049$.

- Find the equation of the least square regression line.
- Use the regression line to predict the final exam score of a student whose average quiz grade is 82.
- Calculate the residual for observation #6.

Problem 4: Consider the following numbers:

4 17 18 19 23 25 27 27 29 32 35 40 42 44 46 61

- Compute the five number summary for the data above.
- Are there any outliers? Justify your answer.
- Sketch a box plot for the above data set.
- Compute the mean and standard deviation for the data above.