

STATISTICS/MATH 103 – 2211/1760

SHANNON MYERS

π 100 POINTS POSSIBLE

π YOUR WORK MUST SUPPORT YOUR ANSWER FOR FULL CREDIT TO BE AWARDED

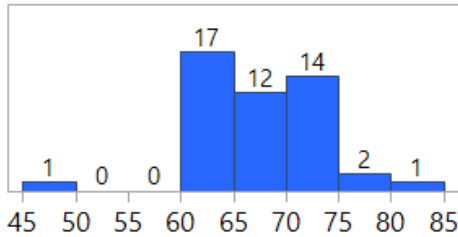
π YOU MAY USE A SCIENTIFIC AND/OR A TI-83/84/85/86 CALCULATOR



ONCE YOU BEGIN THE EXAM, YOU MAY NOT LEAVE THE PROCTORING CENTER UNTIL YOU ARE FINISHED...THIS MEANS NO BATHROOM BREAKS!

NAME _____

- CREDIT WILL BE AWARDED BASED ON WORK SHOWN
 - THERE WILL BE NO CREDIT FOR UNSUPPORTED WORK
 - PLEASE PRESENT YOUR WORK IN AN ORGANIZED, EASY TO READ FASHION
 - DO NOT USE THE STAT MENU OF YOUR CALCULATOR UNLESS IT'S STATED IN THE INSTRUCTIONS FOR THE PROBLEM
1. (25 POINTS) Consider the histogram below, which represents the height of each student in Shannon's statistics classes to complete the tasks.



- a. (4 POINTS) The majority of the data falls between _____ and _____ inches.
- b. (3 POINTS) _____% of all the heights fall between 60 and 65 inches.
- c. (10 POINTS) Please make the frequency table which corresponds to the histogram.
- d. (8 POINTS) Using your table, please find the mean height of a student in Shannon statistics classes.
- e. (5 POINTS) Demonstrate your knowledge of statistics! What do you notice about this distribution? What other information could Shannon have collected to better summarize the distribution of student heights? Please go in depth!

2. (25 POINTS) The data below represents the eye color of everyone in our class.

blue	blue	hazel	brown	green	brown
blue	brown	brown	hazel	other	brown
brown	brown	green	blue	other	brown
brown	green	brown	brown	brown	brown
blue	brown	brown	brown	brown	other
blue	brown	blue	blue	brown	blue
green	brown	green	brown	brown	other
brown	green	brown	brown	hazel	

a. (7 POINTS) Please organize this data using a table.

b. (10 POINTS) Please illustrate this data using an appropriate graph or chart.

c. (2 POINTS) This data is (circle one): quantitative qualitative

d. (2 POINTS) The variable is (circle one): numerical categorical

e. (2 POINTS) The best measure of for this data is (circle one): mean median mode

f. (2 POINTS) The distribution of eye color in our class is/has (circle one):

no mode one mode bimodal multimodal

3. (10 POINTS) A random sampling of households in Leucadia indicated that the average monthly amount spent on home phone, television, and internet was \$160 for all three services with a standard deviation of \$30. The data is symmetric.
- (3 POINTS) Please use the empirical rule to find the percentage of households which spend between \$100 and \$190 per month on these services.
 - (2 POINTS) Please find and interpret the z-score corresponding to a household that spends \$160 per month.
 - (3 POINTS) Would you be surprised if someone you knew from Leucadia spent \$230 per month on these services? Please explain using your amazing statistical knowledge!
4. (10 POINTS, 2 POINTS EACH) Please circle the correct response to each statement.
- T F A z-score measures the number of standard deviations a data value is from the mean.
 - T F A left-tailed distribution means that the mean is to the left of the hump or peak.
 - T F The median is the best measure of center for categorical variables.
 - Yes No Your brother told you he scored in the 100th percentile on a standardized test. Is this possible?

OPTIONAL: (UP TO 10 POINTS—NO EXAM SCORES MAY EXCEED 100%) Assess your own learning! Think about the first third of our class. What have you learned about descriptive statistics? Have you applied any of this knowledge? This portion of the exam is especially for those folks who blanked out on a problem...hey...maybe now that you've written out what you know, you might be able to figure out that pesky problem 😊

Math 103/Myers/Formulas for Exam 1

For this exam, you'll only need the formulas for samples.

Mean

Arithmetic Mean

$$\bar{x} = \frac{\sum x}{n}$$

Mean (Frequency Table)

$$\bar{x} = \frac{\sum f \cdot x}{\sum f}$$

Weighted Mean

$$\bar{x} = \frac{\sum w \cdot x}{\sum w}$$

Standard Deviation and Variance: (I only showed you version 1)

Version 1

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Version 2

$$s = \sqrt{\frac{n \sum (x^2) - (\sum x)^2}{n(n - 1)}}$$

variance = s^2

Percentiles

Percentile of $x = \frac{\# \text{ of data values below } x}{n} \cdot 100$

Location of the k^{th} Percentile: $L = \frac{k}{100} \cdot n$