

**Math 1431**  
**Spring 2003 – Test #1**

**NAME** \_\_\_\_\_

**You are allowed to use your calculator. Explain all answers – answers with no explanation will receive only partial credit. Use complete sentences. Label all graphs.**

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(20 pts.) 1. Below are the unique weekly visitors to <http://john-weber.com> for the last 20 weeks:

16 57 48 68 39 39 42 28 59 29 32 81 29 6 3 5 36 53 45 40

- Make a stemplot showing the distribution of visitors.
  - Make a histogram (with a class width of 10) showing the distribution of visitors.
  - Describe the distribution.
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(25 pts.) 2. The following are the number of semester credits taken by 11 students and GPA earned for the semester:

<b>credits, x</b>	10	18	12	15	16	16	22	9	10	12	15
<b>GPA, y</b>	3.5	2.8	3.3	3.7	2.9	3.0	2.4	3.1	3.5	3.4	3.2

- Describe the overall pattern of the scatterplot.
  - Compute the correlation coefficient.
  - Find the least-squares regression line.
  - What percent of the observed variation in GPA is explained by a straight-line relationship with the number of credits taken?
  - Predict the GPA of a student taking 6 credits.
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(20 pts.) 3. a. Find the mean, five-number summary and standard deviation of the data below:

113 105 130 101 138 118 87 116 75 96 122 103 116  
107 118 103 111 104 111 89 78 100 89 85 88 93

- Present these measurements with the graph of your choice. Explain why you chose the type of graph.
  - Does the shape of the distribution allow the use of mean and standard deviation to describe it? Explain.
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(25 pts.) 4. The mean weight of males at a certain college is 151 pounds and the standard deviation is 15 pounds. Assuming that the weights are normally distributed, find the proportion of male students who weigh:

- between 120 and 155 pounds. Sketch the area.
  - more than 185 pounds. Sketch the area.
  - less than 170 pounds. Sketch the area.
  - What weights would males in the lowest 3% weigh?
  - Use the 68–95–99.7 rule to determine between what two weights do the middle 95% of men fall.
  - Use the 68–95–99.7 rule to what percent of men whose weights are lower than 106 pounds.
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**Short Answers**

(5 pts.) 5. Name two measures of a distribution which are resistant measures and two that are not resistant measures. Explain.

(5 pts.) 6. What is the purpose of a standard normal distribution?

**Extra Credit**

(2 pts.) 7. Given a normal distribution with  $\mu = 505$  and  $\sigma = 101$ , what is the z-score for  $x = 645$ ?