

Math 1431
Summer 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.

1. (10 points)

- a. Construct a scatterplot with 20 observations (points) such that the correlation coefficient has a value $r = -0.8$. Explain.
- b. Construct a scatterplot with 20 observations (points) such that the correlation coefficient has a value $r = 0.1$. Explain.
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2. (20 points) Here are grades from a previous class that I taught:

Test1	77	85	77	31	78	57	79	89	91	72	73	80	83	74	66	84	97	88	68
Test2	94	47	53	51	81	75	93	81	96	79	84	79	44	81	76	86	83	85	63

- a. Did the class perform better on the first or second test? Explain.
- b. On which test is there a larger spread of test scores? Explain.
- c. Sketch a stemplot of the scores for Test 1 and describe the distribution.
- d. Sketch a histogram (with class width of 10) of the scores for Test 2 and describe the distribution.
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3. (16 points) Consider the following data:

33 74 24 57 78 20 46 70 69 16 57 63 76 74 34

- a. What is the appropriate measure of center for this data? Explain. What is its value?
- b. What is the appropriate measure of spread for this data? Explain. What is the value of the spread?
- c. Find the five number summary of the data. What does the five number summary tell us about the data?
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4. (20 points) In the table below, the test 1 score and the final class average is given for a class of students:

Test 1	77	85	77	31	78	57	79	89	91	72	73	80	83	74	66	84	97	88	68
Average	83	85	84	40	81	76	84	86	93	78	78	79	80	78	68	88	92	89	69

- a. Describe the overall pattern of the scatterplot. Compute the correlation coefficient.
- b. Find the least-squares regression line.
- c. What percent of the observed variation in the final class average is explained by a straight-line relationship with the first test score?
- d. Predict the final class average of a student who scored a 60 on the first test.
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5. (17 points) The length of human pregnancies from conception to birth is approximately normal with mean 266 days and standard deviation of 16 days.

- a. What percent of pregnancies last longer than 280 days? Sketch the area.
- b. What percent of pregnancies last between 260 days and 270 days? Sketch the area.
- c. How long do the shortest 10% of pregnancies last?
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6. (17 points) The distribution of SAT scores is approximately normal with mean 500 and standard deviation 100. Use the 68–95–99.7 rule to find the following:

- a. the percent of scores between 200 and 800.
- b. the percent of scores are lower than 300.
- c. the score above which 16% of all the scores lie?