

Your Name _____

Math 140: Statistics
Test 1, February 28, 2008

1. (12 pts. total or 2 pts./answer) Fill-in-the-blank:
 - a) In a study of a new drug, the individuals studied will be divided into two groups, a(n) _____ group and a(n) _____ group.
 - b) If the study can select who will participate in each group, it is said to be a(n) _____ study. If people in the study select whether or not they take the drug, it is a(n) _____ study.
 - c) If the study compares patients taking the drug with the medical records of previous patients, the study is said to use _____. Otherwise, it must be using _____.

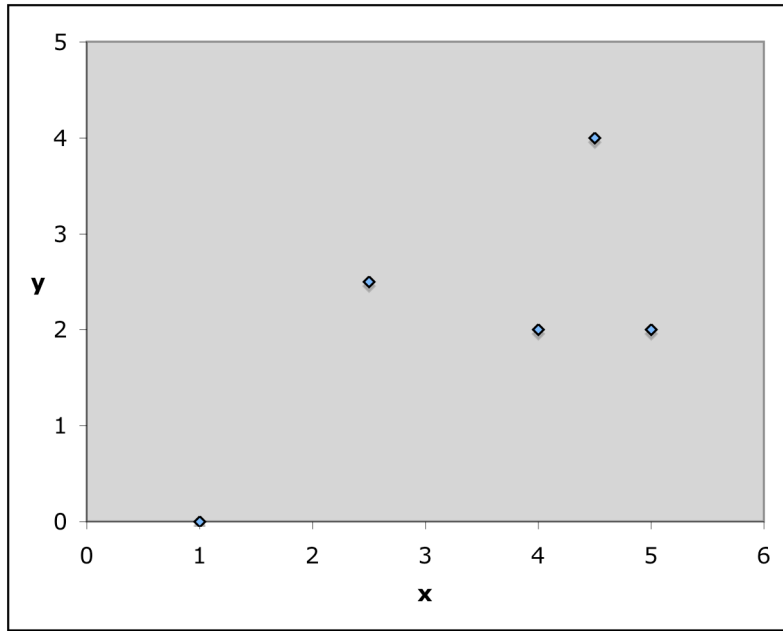
2. (4 pts.) In a hypothetical study, in 1975 there were 4000 deaths per year from a new surgical procedure. By 2000, the death rate had grown to 5000. True or false, and explain: the safety of this surgical procedure got worse over the period 1975 to 2000.

3. (6 pts.) Recall that you can convert from Celsius to Fahrenheit using the formula:

$$F = \frac{9}{5}C + 32$$

If a list of Celsius temperatures have an average of 40 and a standard deviation of 10, what will be the average and standard deviation when the list is converted to Fahrenheit?

4. (12 pts.) Use this scatter diagram to answer the questions that follow:



a) Add the following points to the diagram:

x	y
2	1
1	2
5	3
3	4

b) With the added points, estimate the average and standard deviation for x .

c) Describe the correlation (strong, weak, positive, negative) between the x data and the y data.

5. (4 pts.) You are applying for a summer job at a company with a president, vice president, three managers, and 100 other unskilled employees. Which would be more helpful in estimating your salary, the average salary of all employees or the median salary for all employees? Why?

6. (15 pts) At one time, Wofford College had the following grading scale for courses:

90 or better	<i>A</i>
80 to 89	<i>B</i>
70 to 79	<i>C</i>
below 70	<i>No credit</i>

Here are the grades for 20 students in a class:

88, 72, 64, 91, 45, 90, 88, 73, 81, 95, 56, 76, 69, 77, 83, 79, 81, 54, 17, 100

Create a histogram for this data using the four categories describe above. Be sure to carefully and fully label your histogram.

7. (9 pts.) Find the area under the normal curve:

a) to the right of 1.2

b) to the right of -0.8

c) between -2.0 and -1.5

8. (8 pts.) On the Math SAT in 2005, men averaged about 540 with an SD of 120.

a) What percentage of men scored above 600?

b) What percentage of men scored above 700?

9. (10 pts.) Use this percentile table to answer the questions that follow:

<i>Percent</i>	<i>Income</i>
1	\$0
10	\$15,000
25	\$29,000
50	\$54,000
75	\$90,000
90	\$135,000
99	\$430,000

- a) What is the percentage of incomes between \$15,000, and \$29,000?
- b) The most prosperous 25% have an income above what amount?
- c) What percentile rank would a person with an income of \$135,000 have?
- d) What is the *interquartile range* for this data?
- e) If an applicant needs an income of at least \$100,000 to qualify for a loan, estimate the percentage of people that will be eligible for the loan?
10. (4 pts.) A new weight loss program is evaluated by comparing the losses seen in volunteers participating in the program with the population in general.
- a) What is wrong with this approach?
- b) How can it be improved?

11. Use the following table to answer the following:

x	y
1	5
3	9
4	7
5	1
7	13

a) (6 pts.) Find the *average* and *standard deviation* for both x and y . Be sure to identify each answer.

b) (8 pts.) Find the *correlation coefficient* for this data. Please show relevant work. (Feel free to write in the open area of the table.)

c) (2 pts.) Based on the correlation coefficient you calculate, describe how the x and y data are related.

Pledged: _____