

Name: _____ MTH 109 CDA Test 2 April 2007

This test consists of 10 problems. Do each problem in the space provided. You are allowed to use a calculator; but to get partial credit for incorrect answers, your reasoning must be clear.

Problem	Max Points	Earned Points
1	12	
2	15	
3	8	
4	8	
5	15	
6	10	
7	6	
8	10	
9	8	
10	8	
Total	100	

1. Recall that the five sampling techniques that we discussed in class are **random sampling**, **systematic sampling**, **cluster sampling**, **stratified sampling**, and **convenience sampling**. In each of the situations below, identify the type of sampling used.

(a) A group of people are classified according to age and then random samples of people from each group are taken.

(b) A state is divided into regions using zip codes. A random sample of 20 zip code areas is selected.

(c) Every 17th person in a line to buy tickets to a concert is asked his or her age.

(d) The first 25 students leaving the cafeteria are asked how much money they spent on textbooks this semester.

2. Find the **mean**, **median**, **mode**, and **midrange**, and **range** of the following data set. To get full credit on this problem, you must show that you—not your calculator—understand how these numbers are obtained. (4 points each)

89, 75, 97, 48, 77, 81, 85, 77, 69, 92

(a) Mean=

(b) Median=

(c) Mode=

(d) Midrange=

(e) Range=

3. Seven hundred students took a standardized test in which the maximum possible score was 800 points.

(a) If the 60th percentile was 500 points, about how many students scored below 500?

(b) If the 80th percentile was 600 points, about how many students scored *above* 600?

4. Thirty CNR students were asked how many classes they have on Tuesdays. The following frequency distribution summarizes the results:

Number of classes	Number of students
0	3
1	6
2	15
3	6

(a) What is the median number of classes taken by these students?

(b) What percentage of students have 3 classes on Tuesdays?

5. Women's heights are normally distributed with a mean of 63.6 inches and a standard deviation of 2.5 inches. Refer to the following table to answer the questions below.

Areas under Standard Normal Curve	
z	A
.00	.000
1.00	.341
2.00	.477
3.00	.499

(a) What percentage of women are taller than 63.6 inches?

(b) What percentage of women are between 61.1 and 66.1 inches tall?

(c) What percentage of women are taller than 68.6 inches?

7. The grade distribution in a Quantitative Reasoning class is shown in the table below.

Grade	Number
A	13
B	27
C	31
D	12
F	9

If a student is planning to take this course next fall, what is the empirical probability that she earns a grade of C or higher?

8. A couple plans to have three children, each of which can be either a boy or a girl.

(a) Construct a tree diagram for this situation and list the sample space.

(b) What is the probability that the couple has exactly two girls?

(c) What is the probability that the couple has at least two girls?

9. Three thousand raffle tickets are sold for \$1 each. Three prizes will be awarded: one for \$1000 and two for \$500 each. Determine the expected value of a ticket. (Round your answer to the nearest cent.)

10. Fifty students were asked what brand of cereal they like to eat at 1:00am. The results are summarized in the following table:

Number of Students	Cereal
16	Captain Crunch
21	Cocoa Puffs
9	Frosted Flakes
4	All-Bran

Two people who provided information for the table were selected at random, without replacement. Find the probability that at least one prefers Frosted Flakes at 1:00am. (Express your answer as a decimal rounded to two decimal places.)

End of Test

If you have any comments about the test or about the course, please write them here: