

**EXAM 1**  
Stat 201  
February 12, 2009

Name \_\_\_\_\_

1. Write a formal definition for each of the following terms: (2 pts each)

Data:

Variable:

Sample:

2. What are the four measurement scales and what is the order of their ranking? (6 pts)

3. Assume you have a data set which contains 154 data entries, and which has a range (from smallest to largest) of 21. If you were to group this data how many groups would you choose to present and why? What would be the width of each of your groups? (6 pts)

4. A clinic did a study on the severity of disease associated with *C. difficile* in pediatric inpatients. One of the variables examined was the number of days patients experienced diarrhea. The data for these 22 subjects is:

3, 11, 3, 4, 14, 2, 4, 5, 3, 11, 2, 2, 3, 2, 1, 1, 7, 2, 1, 1, 3, 2

Find the mean, median, standard deviation, coefficient of variance and mode for this set of data. (6 pts)

5. For the set  $\{7, 10, 12, 4, 8, 7, 3, 8, 5, 12, 11, 3, 8, 1, 1, 12, 10, 4, 4, 5, 5, 8, 7, 7, 3, 2\}$  use 4 groups to group the data and write a frequency table. Include frequency, percentage frequency and cumulative frequency. (Useful info: 26 elements, largest is 12, smallest is 1) (6 pts)

6. One hundred married women were asked to specify which type of birth control method they preferred. The following table shows that 100 responses cross-classified by education level of the respondent:

Method	High school(A)	College(B)	Grad School(C)	Total
S	15	8	7	30
T	3	7	20	30
V	5	5	15	25
W	10	3	2	15
Total	33	23	44	100

Find the following probabilities (3 pts each)

(a)  $P(V \cup C)$

(b)  $P(T|A)$

(c)  $P(W)$

(d)  $P(T \cap C)$

7. In a study of certain aquatic organisms, a large number of samples were taken from a pond, and the number of organisms in each sample was counted. The average number of organisms was found to be three. What is the probability that in the next sample taken, the number of organisms will be more than 2? (6 pts)
8. Suppose it is known that in certain population 21 percent of the population has heart disease. If you randomly choose 15 people from this population, what is the probability that at least two of them have heart disease? (6 pts)

9. In a certain developing country, 23 percent of the children are undernourished. In a random sample of 20 children from this area, find the probability that the number of undernourished will be: (4 pts each)

(a) Exactly 12

(b) Between 6 and 15 inclusive.

(c) Fewer than 10

10. On the average, five smokers pass a certain street corner every 10 minutes. Decide whether this is a Binomial or Poisson distribution then use the correct distribution to answer the question, what is the probability that the number of smokers passing this street corner in a given 10 minute period will be (5 pts each)

(a) Less than two

(b) Greater than six

11. Given a data set with a mean  $\mu = 12.3$  and a total sum of 763, how many elements were in the data set? (6 pts)
12. On average two students per hour report for treatment to the first-aid room of a large elementary school. What is the probability that during a given hour between three and five students will report to the first-aid room for treatment? (6 pts)
13. If the total cholesterol values for a certain population are approximately normally distributed with a mean of 200 mg/100 ml and a standard deviation of 20 mg/100 ml, find the probability that an individual picked at random from this population will have a cholesterol value: (4 pts each)
- (a) Between 180 and 200 mg/100 ml
- (b) Greater than 225 mg/100 ml
- (c) Less than 200 mg/100ml