

**ECO251 QBA1  
FIRST EXAM  
February 21, 2008**

Name: \_\_\_\_\_  
Student Number: \_\_\_\_\_  
Class Hour: \_\_\_\_\_

**Remember – Neatness, or at least legibility, counts. In most non-multiple-choice questions an answer needs a calculation or short explanation to count.**

Part I. (7 points)

The following numbers are to be considered a sample and represent the scores of a class of ten seniors on the first exam in Dr. Hardnose's accounting class (Doane and Seward).

$x_1$     60    88    60    71    60    73    74    75    60    99

Compute the following: **Show your work!**

- a) The Median (1)
- b) The Standard Deviation (3)
- c) The 7<sup>th</sup> decile (2)
- d) The Coefficient of variation (1)
- e) (Extra Credit) Dr. Hardnose gives a second exam, but one student is absent. He enters the data from both exams into Minitab with the following results.

MTB > describe c1 c2

**Descriptive Statistics: x1, x2**

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
x1	10	0	-----	-----	-----	60.00	60.00	72.00	78.25	99.00
x2	9	0	72.78	2.19	6.57	65.00	65.00	74.00	79.00	79.00

The numbers computed should be self explanatory except for 'SE Mean,' (the standard error of the mean)

which can be gotten by computing  $s_{\bar{x}} = \frac{s}{\sqrt{n}}$ . I have erased the numbers related to the statistics you should compute.

So – given the statistics that we have learned to compute and the facts that the mean and sample size have changed, can you compare the variability of the results of the first and second exams? (Yes or No won't work here, give me some numbers!)

Part II. (At least 35 points – 2 points each unless marked - Parentheses give points on individual questions. Brackets give cumulative point total.) Exam is normed on 50 points.

1. Which of the following is not a measure of central tendency (2)
  - a) The arithmetic mean
  - b) The geometric mean
  - c) The standard deviation
  - d) The median
  - e) The mode.
  - f) All of the above are measures of central tendency
  - g) None of the above is a measure of central tendency.
  
2. The smaller the spread of data around the mean (2)
  - a) The smaller the interquartile range
  - b) The smaller the standard deviation
  - c) The smaller the coefficient of variation
  - d) All of the above
  - e) None of the above.
  
3. Mark the following items N (nominal), O (ordinal), I (interval) or R (ratio) data. If the data is interval or ratio data, would it be considered C (continuous) or D (discrete)? (4) [8]
  - a) The weights of Sumo wrestlers \_\_\_\_\_
  - b) Your Social Security number \_\_\_\_\_
  - c) Volume of traffic on I-95 (light, medium, heavy) \_\_\_\_\_
  - d) Number of hits in the World Series \_\_\_\_\_
  
4. A number that is used to summarize population data is called (2)
  - a) A parameter
  - b) S
  - c) A statistic
  - d) None of the above would be used to summarize population data
  - e) All of the above could be used to summarize population data.
  
5. If a frequency distribution has a positive coefficient of skewness, we would expect (2) [10]
  - a) The mean to be between the median and the mode
  - b) The mean to exceed the median
  - c) The median to be larger than the mean or the mode.
  - d) The standard deviation to exceed the mean
  - e) The coefficient of excess to be positive
  - f) None of the above would be likely to be true.
  
6. Under what circumstances would you expect a population variance be zero? [12]
  - a) If the mean is zero
  - b) If every observation above the sample mean is precisely offset by a number the same distance below the sample mean.
  - c) If the mean, median and mode were all the same.
  - d) When there are an equal number of observations above and below the median
  - e) None of the above is likely to result in a zero population variance
  - f) All of the above are likely to result in a zero population variance.

7. Batting averages of major league baseball players are thought to follow a symmetrical unimodal distribution with a mean of .260 and a standard deviation of .03.
- What proportion of major league players would you expect to have a batting average above .320? Why? (3)
  - If you did not know that the distribution was symmetrical, what is the largest proportion of players that you would expect to have a batting average above .320? Why? (3) [18]

**Table 1**

Given below is a stem-and-leaf display of the heights in inches of 50 Christmas trees being grown for sale. The smallest tree is 44 inches.

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4 | 44668899
5 | 00112244555577888899
6 | 000022223344557799
7 | 3355
    
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- In Table 1, what is the median height? (2)
- In Table 1, what are the first and third quartiles? What do they lead you to think about the skewness of the distribution? (3)
- In Table 1, assume that you were asked to present the data in 5 classes. Show how you would decide what class interval to use and list the classes below with their frequencies. (4) [27]

	Class	Frequency
A	___ to under ___	___
B	___ to under ___	___
C	___ to under ___	___
D	___ to under ___	___
E	___ to under ___	___