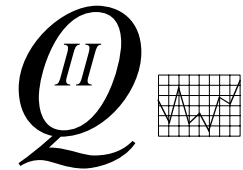


Exam 1 Feb. 15, 1995, Quant II Form A



Name: _____

ID: _____

Section: _____

The exam questions and answer sheet are both to be turned in to your Discussion Section instructor at the end of the exam.. Please mark all of your answers on the answer sheet using a #2 pencil. Write your name and code your ID number and Section number on the answer sheet.

1. Sales this month decreased 15% from last month to 100 million dollars. What were sales last month (to the nearest million)?
 - A) 87
 - B) 100
 - C) 115
 - D) Cannot be determined from the information given.
 - E) None of the above.

2. When analyzing longitudinal data, the first thing to do is:
 - A) display and examine a sequence plot of the data.
 - B) construct and examine a flow chart for the process.
 - C) brainstorm and display a Cause-and-Effect diagram of the data.
 - D) construct and analyze a Pareto diagram
 - E) use Deming's Process Diagram to analyze the process.

3. According to Deming's 14 points of management suppliers should be selected on the basis of lowest cost.
 - A) True
 - B) False

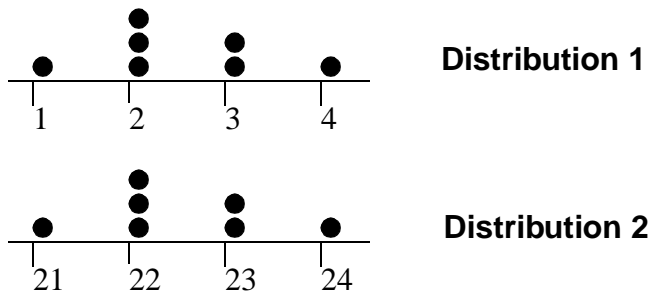
4. Seasonal patterns can best be found in longitudinal data using the tool:
 - A) Pareto diagram
 - B) Cause-and-Effect diagram
 - C) Flow diagram
 - D) Conformance analysis
 - E) Sequence plot with special plotting symbols.

5. A customs agent rolls an ordinary die as each traveler arrives at the customs station. If the die comes up 6 the traveler's luggage is searched thoroughly. Otherwise, the traveler is allowed to pass without a thorough search. Which one of the following is correct?
- A) One out of every 6 travelers receives a thorough search.
 - B) After many travelers have gone through customs, about 60% of them will have been subjected to a thorough search.
 - C) After many travelers have gone through customs, about 12.5% of them will have been subjected to a thorough search.
 - D) Five out of every six travelers is allowed to pass without a thorough search.
 - E) None of the above.
6. There are 150 women in a group of college graduates. Another group consists of 800 women who ended their education after graduating from high school. Which of the following tools would be best suited for comparing the distributions of starting salaries for the two groups?
- A) Pareto diagrams
 - B) dotplots
 - C) stem-and-leaf diagrams
 - D) frequency histograms
 - E) relative frequency histograms
7. Currently, 5 Mexican pesos equal one U.S. dollar. If the price of corn increases 10% as measured in pesos, what is the percentage increase when measured in U.S. dollars?
- A) 5%
 - B) 10%
 - C) 50%
 - D) 100%
 - E) Cannot be determined from the information given.
8. The collection of heights of a group of adults would be best described as:
- A) longitudinal data on a categorical variable.
 - B) cross-sectional data on a categorical variable.
 - C) longitudinal data on a continuous variable.
 - D) cross-sectional data on a continuous variable.
 - E) data with both longitudinal and cross-sectional aspects.

9. The exchange rate is about 5 Mexican pesos for one U.S. dollar. The median price of condominiums in Vida del Mar, Santiago, Mexico is 75,000 U.S. dollars. The interquartile range (IQR) is 10,000 U.S. dollars. What are the median and IQR in Mexican pesos?
- A) 15,000 and 2,000
 - B) 15,000 and 10,000
 - C) 375,000 and 10,000
 - D) 375,000 and 50,000
 - E) None of the above.

10. (Problem 9 continued) What is the value of the third quartile of condominium prices in Mexican pesos?
- A) 80,000
 - B) 85,000
 - C) 380,000
 - D) 400,000
 - E) Cannot be determined from the information given.

11. Dotplots for two distributions are shown below. What can be said about the means and standard deviations of the two distributions?



- A) mean1 = mean2 and stdev1 = stdev2
- B) mean1 < mean2 and stdev1 < stdev2
- C) mean1 = mean2 and stdev1 > stdev2
- D) mean1 < mean2 and stdev1 > stdev2
- E) mean1 < mean2 and stdev1 = stdev2

12. A dataset of 23 values of a variable has a mean of 10.8 and a standard deviation of 3.2. The third data value is 9.2. What is the value of the **deviation from the mean** for this third data value?

- A) $(9.2-10.8)/3.2$
- B) $(9.2-10.8)^2$
- C) $(9.2-10.8)^2/22$
- D) $(9.2-10.8)^2/23$
- E) $(9.2-10.8)$

13. Incomes were reported in whole thousands of dollars. The histogram of the incomes is shown below. Based on the histogram, what percent of incomes are **above** 17 thousand dollars?

Histogram of Income N = 10

Midpoint	Count	
10.00	1	*
15.00	5	*****
20.00	3	***
25.00	1	*

- A) 10
- B) 20
- C) 30
- D) 40
- E) None of the above.

14. A designed study is one in which the elements are chosen by a randomization device.

- A) True B) False

15. Outliers (extreme observations large or small) affect the following:

- I. The median
- II. The interquartile range
- III. The quartiles

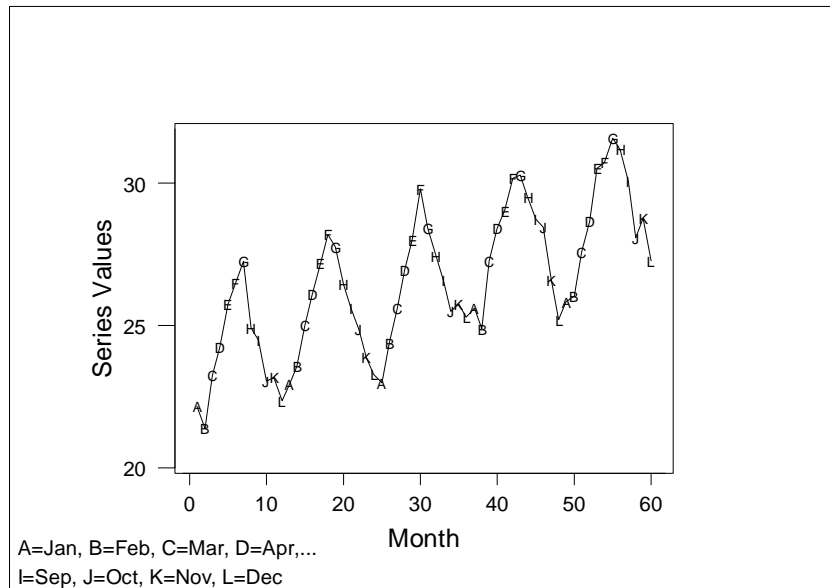
- A) I and II only
- B) II and III only
- C) I and III only
- D) I, II, and III
- E) None of the above.

16. For any set of data, the sum of the deviations from the mean is zero.
A) True B) False
17. A histogram based on many narrow class intervals will fail to show the overall pattern in a distribution.
A) True B) False
18. A skewed distribution has left and right sides that are mirror images of one another.
A) True B) False
19. Which of the following tools are designed for longitudinal analysis?
I. Pareto diagram
II. Cause-and-Effect diagram
III. Sequence plot
A) I only
B) II only
C) III only
D) I, II, and III
E) None of the above.
20. Outliers (extreme observations large or small) affect the following:
I. The mean
II. The range
III. The standard deviation
A) I and II only
B) II and III only
C) I and III only
D) I, II, and III
E) None of the above.
21. Which of the following are categorical variables?
I. gender
II. age
III. eye color
A) I and II only
B) II and III only
C) I and III only
D) I, II, and III
E) None of the above.

22. For the data 4, 2, 10, 8, what is the value of the sum of squared deviations from the mean?
- A) 0
 - B) 6
 - C) 40
 - D) 184
 - E) None of the above.
23. The mean annual income of 20 women is \$22,000 and the mean annual income of 10 men is \$19,000. What is the mean annual income of the combined group of 30 people?
- A) \$19,000
 - B) \$20,000
 - C) \$21,000
 - D) \$22,000
 - E) None of the above.
24. Longitudinal data were collected on a continuous variable but they were given to us only in numerical order from smallest value to largest value rather than in time order. Which of the following could we produce from data as given?
- I. the dotplot
 - II. the median
 - III. the sequence plot
- A) I and II only
 - B) II and III only
 - C) I and III only
 - D) I, II, and III
 - E) None of the above.
25. According to Deming's 14 points of management it is important to establish quotas for workers so that products and services may be improved.
- A) True
 - B) False

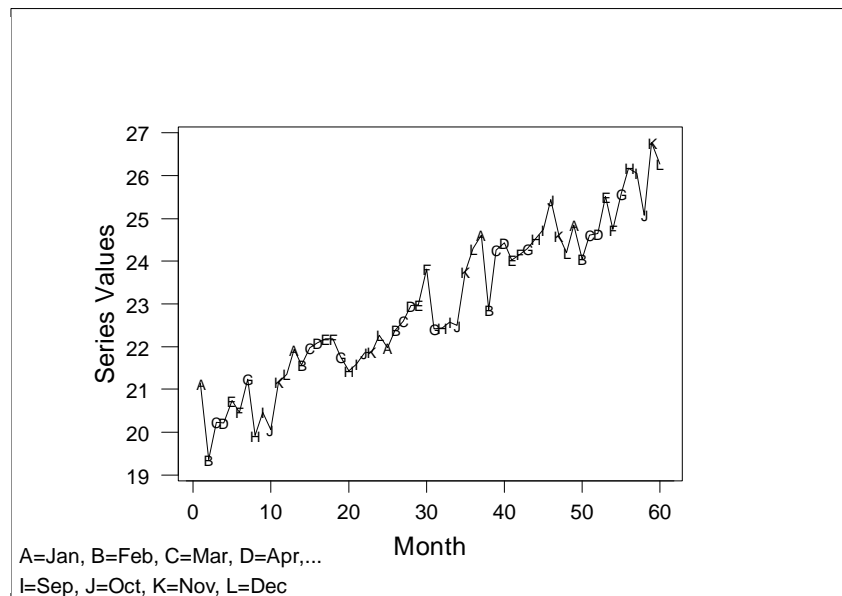
26. A sequence plot of 5 years of monthly data is shown below. Which of the following best describes the plot?

- A) random
- B) meandering
- C) seasonal
- D) straight-line trend
- E) straight-line trend plus seasonal



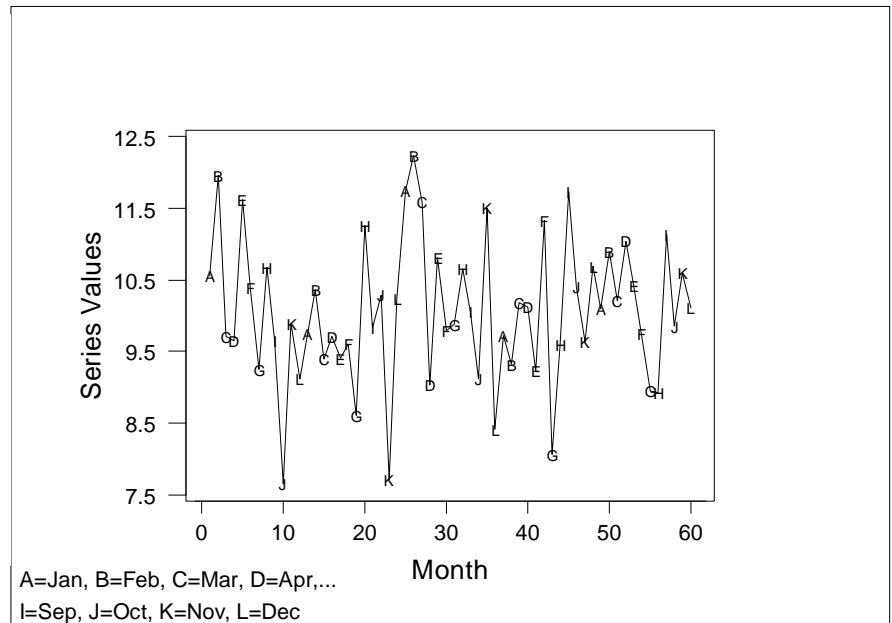
27. A sequence plot of 5 years of monthly data is shown below. Which of the following best describes the plot?

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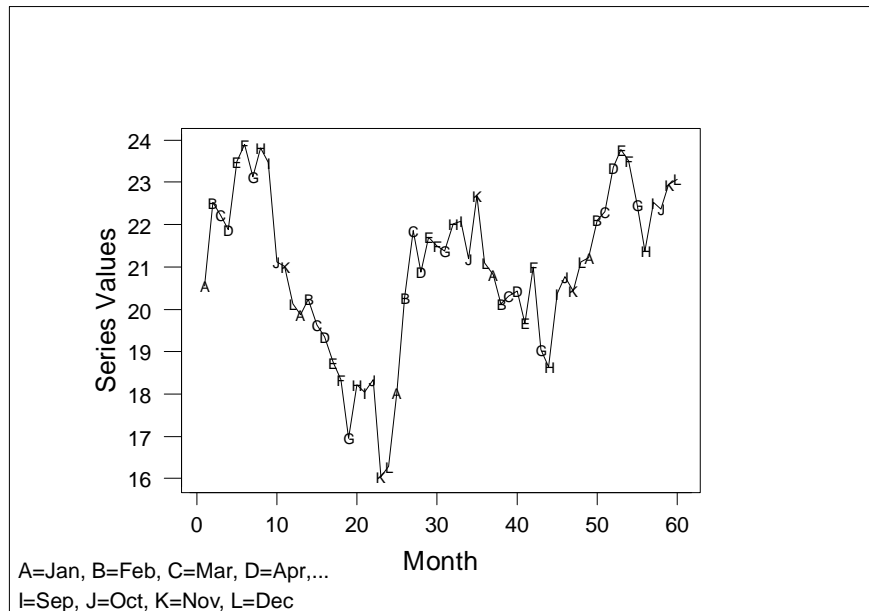
28. A sequence plot of 5 years of monthly data is shown below. Which of the following best describes the plot?

- A) random
- B) meandering
- C) seasonal
- D) straight-line trend
- E) straight-line trend plus seasonal



29. A sequence plot of 5 years of monthly data is shown below. Which of the following best describes the plot?

- A) random
- B) meandering
- C) seasonal
- D) straight-line trend
- E) straight-line trend plus seasonal



30. What are the mean and standard deviation for the data 4, 7, 5, 9, 5?
- A) 5 and 2
 - B) 5 and 1
 - C) 6 and 1
 - D) 6 and 2
 - E) None of the above.
31. If any set of data is standardized, the standard deviation of the standardized data will always be 1. (Assume that the original numbers are not all equal to the same value.)
- A) True
 - B) False
32. In a density histogram, the density for a particular class interval is equal to the
- A) frequency of that interval
 - B) relative frequency of that interval
 - C) frequency of that interval divided by the length of that interval
 - D) relative frequency of that interval divided by length of that interval
 - E) None of the above.
33. Deming's PDCA wheel is a tool that outlines the application of the methods of science to process improvement.
- A) True
 - B) False
34. A random sample of size 2 is to be selected from the group of Aaron, Bob, Jill, Sara, and Todd. Label the people from 0 to 4 in alphabetical order and use the list of digits 5, 1, 7, 2, 4, from the random digits table to select the sample. Who is in the sample?
- A) Aaron and Bob
 - B) Aaron and Todd
 - C) Bob and Jill
 - D) Sara and Todd
 - E) None of the above.
35. In an observational study randomization is **not** used to select elements for observation.
- A) True
 - B) False