

General Instructions:

All work must reflect individual work, be completed on separate paper and attached to the rear of the Assessment packet. The cover page should be filled out completely. Work for multiple choice questions is advised, though not always necessary. The Free-Response and Investigative Tasks typically require a considerable amount of writing. It is advised that the reading packets are not used for reference during an assessment, however it is permissible.

A TI-83 or TI-84 calculator is ALWAYS permitted.

Student Name: _____

Date Completed: ____/____/2008

Time Begin: _____

Time Start: _____

Postmark Deadline: 15 July 2008

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Chapter 2 Assessment

MULTIPLE-CHOICE QUESTIONS

Choose the best answer of those listed.

Use the following data for questions 1–5.

A survey was conducted to gather ratings of the quality of service at local restaurants at a nearby mall. Respondents were to rate overall service using values between 0 (terrible) and 100 (excellent). The data are represented by the following stem plot. (Note: A calculator should not be necessary for questions 1–4.)

Stem	Leaves
3	2 4
4	0 3 4 7 8 9 9 9
5	0 1 1 2 3 4 5
6	1 2 5 6 6
7	0 1
8	
9	2

1. What percent of the respondents rated quality as very good or higher (rating of 80 or more on a numerical scale of 0 to 100)?

- (A) 0%
- (B) 4%
- (C) 25%
- (D) 96%
- (E) 100%

2. The median response was

- (A) 49
- (B) 50
- (C) 51
- (D) 62
- (E) cannot be determined.

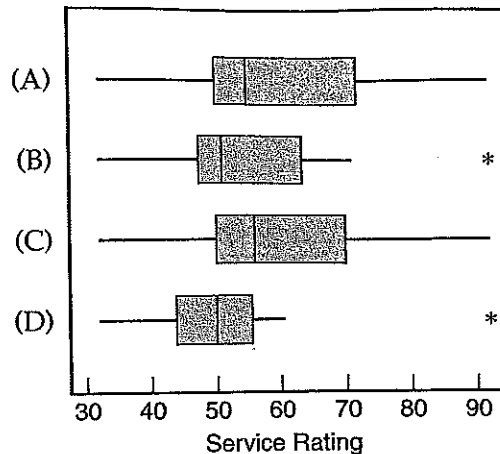
3. The mean of these data is

- (A) equal to the median.
- (B) less than the median.
- (C) greater than the median.
- (D) an integer.
- (E) cannot be determined.

4. The value of 92 is

- (A) the maximum but not an outlier.
- (B) the maximum and an outlier.
- (C) one of two outliers.
- (D) not a data value.
- (E) none of these.

5. The box plot of the data is



(E) None of these are box plots of the data.

Use the following data for questions 6–8.

The table below lists the number of applications to a sample of 10 colleges that are located within the same state. The values are in 100's.

Colleges	Numbers (100's)	Colleges	Numbers (100's)
A	72.0	F	26.9
B	63.1	G	25.0
C	54.7	H	23.9
D	54.3	I	23.0
E	29.0	J	20.0

6. What is the sample variance (rounded to two decimal places)?

- (A) 18.54
- (B) 19.54
- (C) 343.75
- (D) 381.94
- (E) None of these.

7. Assuming that the mean and standard deviation are 40 and 19 respectively, what is the z-score for college A?

- (A) .292
- (B) .594
- (C) 1.68
- (D) 2.15
- (E) 32

8. Which display could *not* be used for these data?
- stem and leaf
 - dot plot
 - histogram
 - pie chart
 - all of these can be used.

9. In skewed-right distributions, what is most frequently the relationship of the mean, median, and mode?
- mean > median > mode
 - median > mean > mode
 - mode > median > mean
 - mode > mean > median
 - mean > mode > median

Use the following data for questions 10 and 11.

A random survey was conducted to determine the cost of residential gas heat. Analysis of the survey results indicated that the mean monthly cost of gas was \$125, with a standard deviation of \$10.

10. If the distribution is mound-shaped and symmetric, what percent of homes will have a monthly bill of more than \$115?
- 34%
 - 50%
 - 68%
 - 84%
 - 97.5%

11. The z-score of a house with a gas bill of \$150 per month is
- 2.5
 - .40
 - 1.5
 - 2.5
 - 25

12. The average life expectancy of males in a particular town is 75 years, with a standard deviation of 5 years. Assuming that the distribution is mound-shaped and symmetric, the approximate 15th percentile in the age distribution is
- 60
 - 65
 - 70
 - 75
 - 80

FREE-RESPONSE QUESTIONS

Open-Ended Questions

- If the mean of 75 values is 52.6 pounds and the mean of 25 values is 48.4 pounds, find the mean of all 100 values.
- Of 500 high school students whose mean height is 67.8 inches, 150 were girls. If the mean height of the girls was 63.0 inches, what is the mean height of the boys?
- Draw a histogram that is symmetric but not mound-shaped.
- Create a data set of 10 values whose box plot has no whiskers.
- Which grade is better: A 78 on a test whose mean is 72 and standard deviation is 6.5, or an 83 on a test whose mean is 77 and standard deviation is 8.4? Justify your answer.

Investigative Tasks

- The following table lists the number of keys that a class of AP Statistics students had in their possession on a certain day:

Number of Keys	Number of Students
0	2
1	5
2	4
3	6
4	10
5	8

- Draw a histogram of the data. Describe the nature of the graph.
- Draw a box plot of the data. What does the box plot tell you about the distribution?
- Describe the benefits of the two graphs. Choose the one that you believe best describes the data. Explain your choice.
- Calculate the mean, the standard deviation, and the five-number summary for these data. Which set of summary statistics best describes the data? Explain the reasons for your choice.

2. Use the following table of test grades for two classes, A and B, for this investigative task.

A	B	A	B	A	B	A	B
97	100	75	78	91	74	95	75
86	65	82	98	65	82	45	98
74	75	81	65	62	83		

- Construct a back-to-back stem and leaf plot and parallel box plots for the data from the two classes.
- Which plot best describes the distributions of the test scores? Explain the reasons for your answer.
- Calculate the five-number summary and the mean and standard deviation for each set of grades.
- Describe the benefits of each set of summary statistics for these data.
- Which class did better based on your plots and calculations? Defend your opinion.