CHAPTER 3 FORM A

Name_____ Course Number:_____ Section Number:_____

Directions: Answer the questions in the spaces provided, or attach paper. Cicle the correct choice for each response set. If required, show calculations in the blank spaces near the problems.

Provide an appropriate response.

1) Dave is a college student contemplating a possible career option. One factor that will influence his decision is the amount of money he is likely to make. He decides to look up the average salary of graduates in that profession. Which information would be more useful to him, the mean salary or the median salary. Why?

Find the mean for the given sample data. Unless indicated otherwise, round your answer to one more decimal place than is present in the original data values.

2) Last year, nine employees of an electronics company retired. Their ages at retirement are listed below. Find the mean retirement age.

52 68 64
50 64 58
60 50 50

A) 56.1 yr B) 56.7 yr C) 58.0 yr D) 57.3 yr

Find the median for the given sample data.

3) The distances (in miles) driven in the past week by each of a company's sales representatives are listed below.

113 143 269 251 380 460

Find the median distance driven.

A) 251 mi B) 230.50 mi C) 260 mi D) 269 mi

Find the mode(s) for the given sample data.

4) Last year, nine employees of an electronics company retired. Their ages at retirement are listed below.

54 65 60 51 53 59 61 58 52

A) 58 yr

B) no mode

C) 57.0 yr

D) 54 yr, 65 yr, 60 yr, 51 yr, 53 yr, 59 yr, 61 yr, 58 yr, 52 yr

Find the midrange for the given sample data.

5) Listed below are the amounts of time (in months) that the employees of an electronics company have been working at the company. Find the midrange.

15 21 28 34 48 51 61 61 73 76 85 91 132 155

A) 70 months B) 66.5 months C) 61 months D) 85 months

Find the mean of the data summarized in the given frequency distribution.

6) The test scores of 40 students are summarized in the frequency distribution below. Find the mean score.

Score	Students
50–59	8
60–69	7
70–79	10
80–89	9
90–99	6

A) 74.5 B) 70.3 C) 74.0 D) 66.6

Solve the problem.

7) A student earned grades of B, B, A, C, and D. Those courses had these corresponding numbers of credit hours: 3, 6, 2, 6, 3. The grading system assigns quality points to letter grades as follows: A = 4, B = 3, C = 2, D = 1, and F = 0. Compute the grade point average (GPA) and round the result to two decimal places.

A) 1.50 B) 2.50 C) 3.85 D) 10.00

8) The geometric mean is often used in business and economics for finding average rates of change, average rates of growth, or average ratios. Given n values (all positive), the geometric mean is the nth root of their product. The average growth factor for money compounded at annual interest rates of 45%, 30%, 23%, and 37% can be found by computing the geometric mean of 1.45, 1.3, 1.23, and 1.37. Find that average growth factor.

A) 0.7941 B) 0.046 C) 1.7822 D) 1.335

Find the variance for the given data. Round your answer to one more decimal place than the original data.

9) Jeanne is currently taking college zoology. The instructor often gives quizzes. On the past five quizzes, Jeanne got the following scores:

18 16 3 1 20

A) 107.3 B) 63.4 C) 79.2 D) 79.3

Find the coefficient of variation for each of the two sets of data, then compare the variation. Round results to one decimal place.

10) Listed below are the systolic blood pressures (in mm Hg) for a sample of men aged 20–29 and for a sample of men aged 60–69.

Men aged 20–29: 120 124 130 118 131 123
Men aged 60–69: 130 148 141 125 164 139

A) Men aged 20–29: 4.2%
Men aged 60–69: 9.8 %
There is substantially more variation in blood pressures of the men aged 60–69.

B) Men aged 20–29: 4.4%
Men aged 60–69: 10.2%
There is substantially more variation in blood pressures of the men aged 60–69.

C) Men aged 20–29: 6.9%
Men aged 60–69: 4.5%
There is more variation in blood pressures of the men aged 20–29.

D) Men aged 20–29: 4.0%
Men aged 60–69: 7.8%
There is substantially more variation in blood pressures of the men aged 60–69.

Use the range rule of thumb to estimate the standard deviation. Round results to the nearest tenth.

11) The maximum value of a distribution is 47.5 and the minimum value is 4.0.

A) 7.9 B) 18.9 C) 10.9 D) 15.9

Use the empirical rule to solve the problem.

12) At one college, GPA's are normally distributed with a mean of 2.6 and a standard deviation of 0.4. What percentage of students at the college have a GPA between 2.2 and 3?

A) 95% B) 68% C) 84.13% D) 99.7%

Solve the problem.

13) The data set below consists of the scores of 15 students on a quiz. For this data set, which measure of variation do you think is more appropriate, the range or the standard deviation? Explain your thinking.

90 90 91 91 89
90 89 91 91 90
60 90 89 90 91

Find the number of standard deviations from the mean. Round your answer to two decimal places.

14) The annual snowfall in a town has a mean of 31 inches and a standard deviation of 11 inches. Last year there were 66 inches of snow. How many standard deviations from the mean is that?

A) 3.18 standard deviations below the mean

B) 3.18 standard deviations above the mean

C) 0.30 standard deviations below the mean

D) 0.30 standard deviations above the mean

Find the z–score corresponding to the given value and use the z–score to determine whether the value is unusual. Consider a score to be unusual if its z–score is less than –2.00 or greater than 2.00. Round the z–score to the nearest tenth if necessary.

15) A weight of 99 pounds among a population having a mean weight of 162 pounds and a standard deviation of 24.3 pounds.

A) –2.6; unusual

B) 2.6; not unusual

C) –63.2; unusual

D) –2.6; not unusual

Determine which score corresponds to the higher relative position.

16) Which score has the highest relative position: a score of 51.5 on a test for which $\bar{x} = 47$ and $s = 9$, a score of 5.9 on a test for which $\bar{x} = 4.2$ and $s = 1.2$ or a score of 460.8 on a test for which $\bar{x} = 444$ and $s = 42$?

A) A score of 51.5

B) A score of 460.8

C) A score of 5.9

Find the percentile for the data value.

17) Data set: 4 12 9 6 4 4 12 6 4 12 2 12 15 5 9 4 12 9 6 12; data value: 6

A) 62

B) 25

C) 40

D) 35

Find the indicated measure.

18) Use the given sample data to find Q_3.

49 52 52 52 74 67 55 55

A) 67.0

B) 6.0

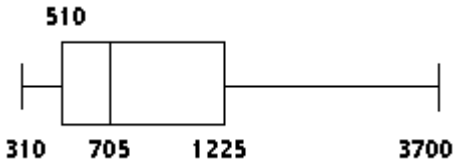
C) 55.0

D) 61.0

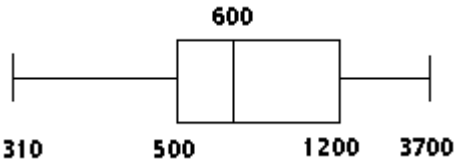
Construct a boxplot for the given data. Include values of the 5–number summary in all boxplots.

19) The weekly salaries (in dollars) of 24 randomly selected employees of a company are shown below. Construct a boxplot for the data set.
310 320 450 460 470 500 520 540
580 600 650 700 710 840 870 900
1000 1200 1250 1300 1400 1720 2500 3700

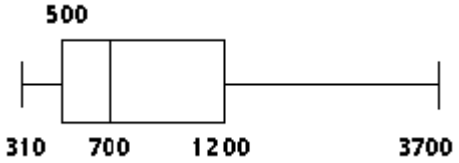
A)



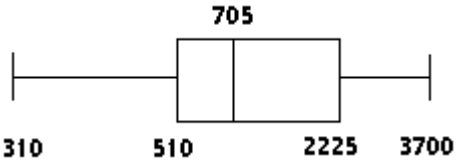
B)



C)



D)



Provide an appropriate response.

20) Which of the following statements regarding percentiles is true? (More than one statement may be true).

A : In any data set, P_{90} is greater than P_{80}

B: In any data set, $\frac{P_{10} + P_{90}}{2}$ is equal to Q_2

C: In a set of 20 test scores, the percentile of the second highest score is 95

A) B
B) A
C) All of the above
D) C

1) The median salary would be more useful. Explanations will vary. Possible answer: In the case of salaries, there are likely to be a few extreme values – salaries that are much higher than the majority of salaries. Unlike the mean, the median is resistant to extreme values – it will not be affected by a few unusually high salaries. The median gives a better indication of the "typical" salary than the mean.
2) D
3) C
4) B
5) D
6) C
7) B
8) D
9) D
10) A
11) C
12) B
13) For this data set, the range is very misleading. The range depends only on the smallest and largest values and the remainder of the data contributes nothing to the range. In this case, the smallest value is an outlier. Thus, even though all the values except one lie between 89 and 91, the range is 31. The standard deviation, while it will also be affected by the outlier, will be less misleading, as it depends on every piece of data.
14) B
15) A
16) C
17) D
18) D
19) A
20) B