

Name _____

Justify all answers by showing your work or by providing a coherent explanation. Please circle your answers

1. Which of the following statistical terms are **not** related to some aspect of identifying whether a data distribution is normal?

- a. Ryan-Joiner Test
- b. QQ plot
- c. kurtosis
- d. IQR
- e. skewness

2. Given IQ scores are approximately normally distributed with a mean of 100 and standard deviation of 15, the proportion of people with IQs above 130 is:

- a. 95%
- b. 68%
- c. 5%
- d. 2.5%
- e. 1%

3. If the largest value of a data set is doubled, which of the following is **false**?

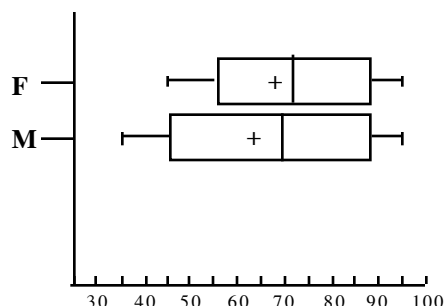
- a. The mean increases.
- b. The standard deviation increases.
- c. The interquartile range increases.
- d. The range increases.
- e. The median remains unchanged.

4. A substitute teacher was asked to keep track of how long it took her to get to her assigned school each morning. Here is a stem plot of the data. Would you expect the mean to be higher or lower than the median? _____

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2|0002344578
3|00257
4|127899
5|028
6|05
  
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5. The scores of male (M) and female (F) students on a statistics exam are displayed in the following boxplots. The pluses indicate the location of the means. Which of the following is correct?



- a. The mean grade of the females is about 72.
- b. About 75% of the males score above 82.
- c. The median of the male students is about 66.
- d. About 25% of the females scored above 72.
- e. The scores of the males have a higher variability than the scores of the females.

6. A modified box plot differs from a standard box plot by displaying outlier data. Which of the following stray data items, if any, will show as outliers if $Q_1 = 50$, $Q_3 = 65$ and the upper and lower fence calculations are given by an offset of $\pm 1.5 \times \text{IQR}$?

a. 30

b. 78

c. 25

d. 82

e. none of the above
7. In constructing a stratified random sample from a population of 800 men and 700 women, approximately how many women should be chosen for a sample of size 100?

a. 52

b. 70

c. 47

d. 50

e. none of the above
8. A financial analyst's sample of six companies' book value were \$25, \$7, \$22, \$33, \$18, \$15. The sample mean and sample standard deviation are (approximately):

a. 20 and 79.2 respectively.

b. 20 and 8.9 respectively.

c. 120 and 79.2 respectively.

d. 20 and 8.2 respectively.

e. 120 and 8.9 respectively.
9. The *Test Of Variables of Attention (T.O.V.A.)* is a neuropsychological assessment that measures a person's attention while screening for attention deficit hyperactivity disorder. The mean and standard deviation of standard T.O.V.A scores are 100 and 10 respectively. What would someone's approximate T.O.V.A. score be if their raw score was 88 from a group with a raw score mean of 92 and standard deviation of 6?

a. 107

b. 93

c. 95

d. 96

e. 104
10. The coefficient of variation of the *height* of 20 people selected at random from a given city is found to be 15%. The *weight* of the selected group has a mean value 72 kg and a standard deviation 8 kg. The coefficient of variation for the weight of the selected group is ...

a. 0.11

b. 8.33%

c. 11.11%

d. 20%

e. none of the above
11. The obtained results show that ...

a. the weight is more variable than height.

b. the weight is less variable than height.

c. height and weight have the same degree of variation.

d. height and weight are independent.

e. none of the above
12. The diameter of red blood cells in healthy adults is normally distributed with a mean of 7.5 and a standard deviation of 0.3 microns. What percent of red blood cells have a diameter between 7.2 and 7.5 microns?

a. 68%

b. 34%

c. 95%

d. 99.7%

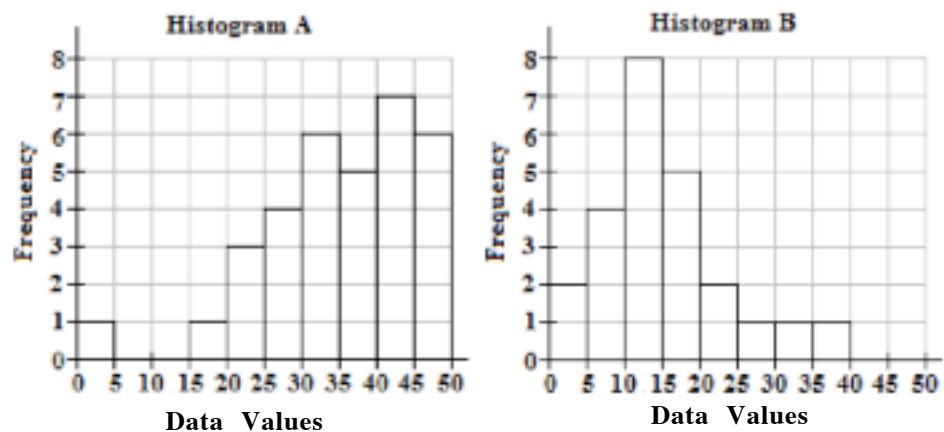
e. 5%

13. A sample of underweight babies was fed a special diet and the following weight gains (lbs) were observed at the end of three months:

3	3	2	5	6	5	5	6	7	8
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The sample mean and standard deviation are:

- a. 5, 1.886 b. 4, 1.900 c. 5.5, 1.500 d. 5, 2.066
e. none of the above
14. After statistical calculations were done for the preceding problem (13), an error was discovered. One of the 5's was really a 4. The measures of central tendency which will change are:
- a. the mean only b. the mode only. c. the median only
d. the mean and the mode. e. all three measures
15. Rainwater was collected in water collectors at 30 different sites near an industrial complex, and the amount of acidity (pH level) was measured. The mean and standard deviation of the values are 4.60 and 1.10, respectively. When the pH meter was recalibrated back at the laboratory, it was found to be in error. The error can be corrected by adding 0.1 pH units to all of the values and then multiplying the result by 1.2. The mean and standard deviation of the corrected pH measurements are :
- a. 5.64, 1.44 b. 5.64, 1.32 c. 5.40, 1.44
d. 5.40, 1.32 e. 5.64, 1.20
16. Use the histograms below to answer the following



- a) Which distribution had collected more data?
- b) Which distribution has a larger range?
- c) Which distribution is more likely to have a shape described as “skewed right?”
- d) Which distribution is more likely to have a higher median than mean?