

TEST NAME: **NAMSIM11314S-ID.3**
TEST ID: **130073**
GRADE: **09**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

Class: _____

Date: _____

1. An outlier with the value of 14 is added to the data set 3, 4, 5, 6, and 7. How does the outlier affect the mean and median?
 - A. The mean increases by 0.5, and the median increases by 1.5.
 - B. The mean increases by 1.5, and the median increases by 0.5.
 - C. The mean increases by 1.5, and the median increases by 2.0.
 - D. The mean increases by 2.0, and the median increases by 1.5.

2. Pete adds 78 to the data set below.

20, 32, 32, 45, 50

Which statement below will be true?

- A. The mode will increase.
 - B. The mean will remain the same.
 - C. The median will remain the same.
 - D. The interquartile range will increase.
3. A data set is normally distributed. As data points are removed from both ends of the range, what happens to the display of data?
 - A. The display becomes skewed right.
 - B. The display becomes skewed left.
 - C. The display becomes more peaked at the center.
 - D. The display becomes less peaked at the center.

4. Given the following data set

6, 9, 12, 14, 7, 9, 6, 8, 25, 12, 14

What is the mean of the data set without the outlier(s)?

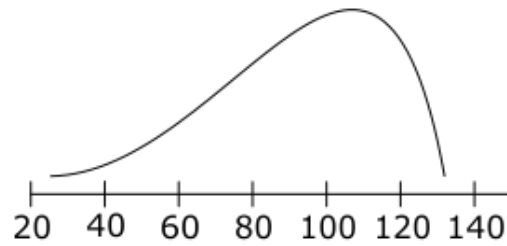
- A. 9.2
 - B. 9.7
 - C. 11.1
 - D. 12.4
5. During each six-week grading period, the students in Mr. Welsh's math class are allowed to drop their lowest test score. Kim had the following scores: 96, 84, 84, 73, 87, 100, and 66. If Kim drops her lowest test score, which measure will be **most affected**?
- A. mean
 - B. median
 - C. interquartile range
 - D. standard deviation
6. A data set is shown below.

56, 64, 73, 59, 98, 65, 59

If the outlier is removed from the data set, which measure of central tendency will be **least affected**?

- A. range
- B. mode
- C. median
- D. mean

7. The display below shows a set of data points.



If several data points between 115 and 130 are removed, what is the effect on the display?

- A. The data becomes more peaked.
 - B. The data becomes less skewed.
 - C. The data becomes more skewed.
 - D. There is not enough information to determine the effect.
8. The list below shows the number of hits six players on a baseball team had during a season.

24, 18, 36, 40, 28, 22

A seventh player on the team had 63 hits. Which measure would be affected the most by including the seventh player?

- A. mean
- B. median
- C. standard deviation
- D. interquartile range

9. Given the following data set:

80, 82, 78, 91, 89, 98, 97, 73, 30, 73, 71

Which statement is true?

- A. The mean is 83.2 when outlier(s) are included.
- B. The mean is 78.4 when outlier(s) are not included.
- C. The mean is approximately 1.6 units greater than the median when outlier(s) are included.
- D. The median is approximately 1.6 units greater than the mean when outlier(s) are included.

10. The data set below has an outlier of 42.

2, 5, 12, 15, 19, 4, 6, 11, 16, 18, 12, 12, 42

What effect does removing the outlier have on the distribution of the data?

- A. The mean will decrease.
- B. The median will decrease.
- C. The mean will increase.
- D. The median will increase.

11. Which statistical measure will be **most affected** if the outlier is removed from the data set below?

20,000; 24,500; 26,000; 31,000; 31,000; 63,000

- A. mean
- B. median
- C. standard deviation
- D. interquartile range

12. The hourly salaries of the workers at a restaurant are shown below.

\$7.75, \$8.50, \$7.25, \$9.00, \$30.00, \$8.25, \$7.75, \$9.00

Which statement is true?

- A. The worker who earns \$7.25 an hour causes the mean to be a better representation of the typical salary than the median.
 - B. The worker who earns \$7.25 an hour causes the median to be a better representation of the typical salary than the mean.
 - C. The worker who earns \$30.00 an hour causes the mean to be a better representation of the typical salary than the median.
 - D. The worker who earns \$30.00 an hour causes the median to be a better representation of the typical salary than the mean.
13. The number of points a basketball team scored in 8 games are shown below.

82, 89, 88, 83, 88, 52, 89, 91

Which statement is true?

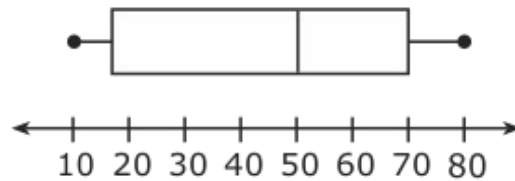
- A. When the team scored 52 points, it caused the mean number of points scored to decrease.
- B. When the team scored 52 points, it caused the median number of points scored to increase.
- C. When the team scored 91 points, it caused the mean number of points scored to decrease.
- D. When the team scored 91 points, it caused the median number of points scored to increase.

14. The data below represent the ages of several people in a class.

Person	Age
Mr. Smith	45
Sam	12
Chris	11
Lovell	13
Christina	12
Susan	12

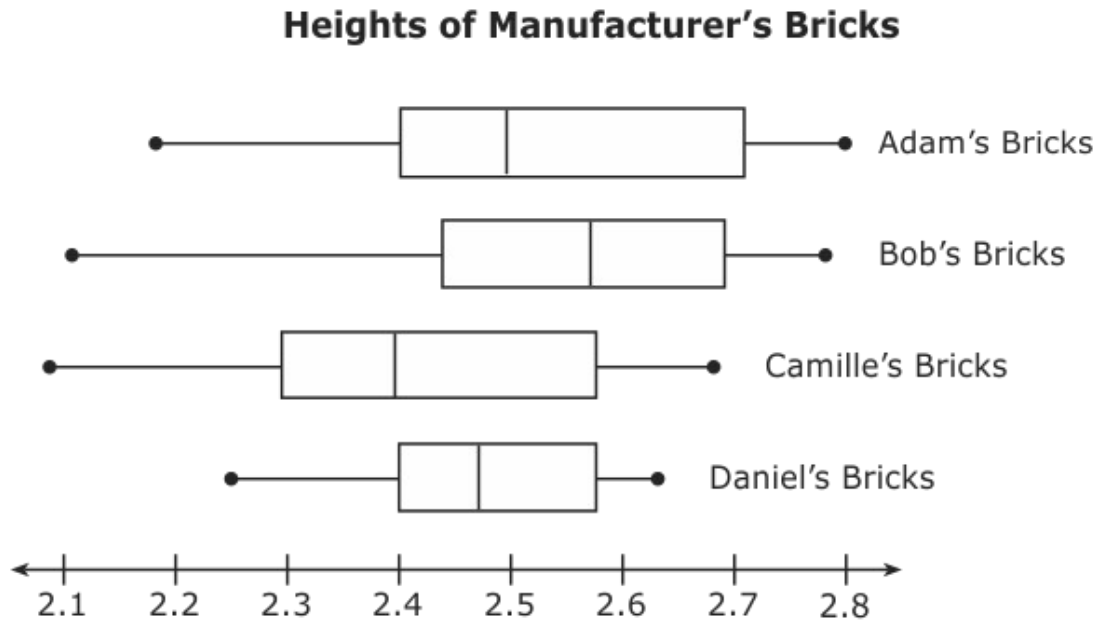
What effect does Mr. Smith's age have on the data set?

- A. Mr. Smith's age increases the mode of the data.
 - B. Mr. Smith's age decreases the mean of the data.
 - C. Mr. Smith's age increases the mean of the data.
 - D. Mr. Smith's age decreases the median of the data.
15. Which would be the effect on the box plot if 150 were added to the data set?



- A. The range would double.
- B. The mean would stay the same.
- C. The interquartile range becomes smaller.
- D. The maximum becomes the upper quartile.

16. Box plots for four competing brick manufacturers are shown below.



A contractor needs to buy bricks that are each as close to 2.5 inches high as possible. Which manufacturer would be the contractor's **best** choice?

- A. Adam's Bricks
- B. Bob's Bricks
- C. Camille's Bricks
- D. Daniel's Bricks

17. If 20 is added to the data set below, which statement will be true?

50, 55, 55, 60, 62

- A. The median will be 20.
- B. The mode will increase.
- C. The mean will increase.
- D. The mean will decrease.

18. Given the data set below:

15, 56, 58, 60, 63, 75, 80, 80, 85

How does the outlier affect the distribution of the data?

- A. The outlier skews the distribution to the left.
 - B. The outlier skews the distribution to the right.
 - C. The outlier makes the distribution more symmetrical.
 - D. The outlier has no effect on the distribution.
19. Jacob recorded the ages of the people at a picnic. The data set is listed below.

12, 12, 14, 15, 16, 20, 24, 28, 32, 35, 36

What effect does the arrival of Jacob's 72-year old grandfather have on the difference between the mean and the median ages of people at the picnic?

- A. The difference increases by about 2.1.
- B. The difference increases by about 3.3.
- C. The difference increases by about 4.1.
- D. The difference increases by about 4.3.

20. The number of books 11 students read during their summer vacation are shown below.

5, 7, 4, 23, 3, 2, 4, 4, 3, 8, 6

Which statement below is true?

- A. The student who read 2 books caused the data distribution to be skewed to the left.
- B. The student who read 2 books caused the data distribution to be skewed to the right.
- C. The student who read 23 books caused the data distribution to be skewed to the left.
- D. The student who read 23 books caused the data distribution to be skewed to the right.

21. The table below shows the lengths of fences a company installed during a week.

400 feet	460 feet	380 feet	410 feet
450 feet	2,250 feet	470 feet	380 feet
275 feet	520 feet		

Which statement is true?

- A. The 275-foot fence caused the mean to be significantly lower than the median.
- B. The 275-foot fence caused the median to be significantly lower than the mean.
- C. The 2,250-foot fence caused the mean to be significantly greater than the median.
- D. The 2,250-foot fence caused the median to be significantly greater than the mean.

22. The table below shows the number of questions ten students answered incorrectly on a fifty-question test.

4	3	2	1
0	2	14	3
1	5		

Which statement describes the display of the distribution of questions answered incorrectly?

- A. The student who missed 0 items caused the distribution to be skewed to the right.
 - B. The student who missed 0 items caused the distribution to be skewed to the left.
 - C. The student who missed 14 items caused the distribution to be skewed to the right.
 - D. The student who missed 14 items caused the distribution to be skewed to the left.
23. A bowler had the following scores after 5 games: 196, 205, 197, 280, and 202. How much does the bowler's mean score increase if the outlier is considered, compared to if the outlier is not considered?
- A. 13
 - B. 16
 - C. 19
 - D. 22
24. A realtor wants to give a customer an idea of housing prices in a neighborhood. All the houses are priced within \$20,000 of one another, except one house that is much larger and more expensive than the rest. Which measure(s) of central tendency will be most affected by the one expensive house?
- A. mode only
 - B. mean only
 - C. both mode and mean
 - D. both mean and median

25. The high temperatures, in degrees Fahrenheit, for eight cities on the same day are shown below.

58, 50, 87, 49, 43, 39, 52, 45

Which statement is true about the temperatures?

- A. The temperature of 39 causes the distribution to be skewed to the right.
- B. The temperature of 39 causes the distribution to be skewed to the left.
- C. The temperature of 87 causes the distribution to be skewed to the right.
- D. The temperature of 87 causes the distribution to be skewed to the left.

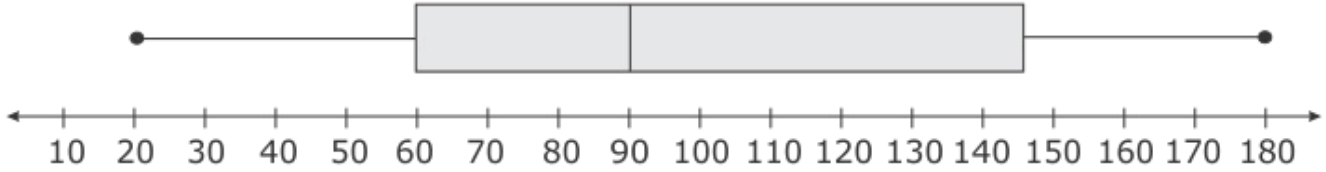
26. The salaries of the employees at a company are shown below.

\$40,000, \$45,000, \$48,000, \$52,000, \$48,000, \$46,000, \$37,000,
\$45,000, \$90,000, \$42,000

Which statement is true about the data set?

- A. The salary of \$37,000 causes the median to be significantly lower than the mean.
- B. The salary of \$37,000 causes the mean to be significantly lower than the median.
- C. The salary of \$90,000 causes the median to be significantly greater than the mean.
- D. The salary of \$90,000 causes the mean to be significantly greater than the median.

27. Two outliers will be added to the set of data displayed in the box plot below. One outlier is 1.5, and the other is 456.5.



How will the median be changed by these outliers?

- A. The median will stay the same.
 - B. The median will be reduced by 1.5.
 - C. The median will be increased by 229.
 - D. The median will be increased by 456.5.
28. The prices at several different stores for a pair of shoes are shown below.

\$78, \$79, \$81, \$82, \$83

Two days later, another store has the same shoes on sale for \$65. How does the new price affect the data?

- A. Only the range was affected.
 - B. The median increased, and the range increased.
 - C. The mean increased, and the range increased.
 - D. The mean decreased, and the range increased.
29. Linda's quiz scores are 95, 88, 98, 92, 100, and 50. If the outlier is removed, how is the shape of the distribution of the scores affected?
- A. The distribution will become skewed right.
 - B. The distribution will become skewed left.
 - C. The distribution will become more normal.
 - D. The distribution will not change.

30. The ages of nine employees at a company are shown below.

45, 50, 52, 58, 63, 63, 41, 58, 49

The company hires a tenth employee who is 28 years old. What effect does the new employee have on the shape of the data distribution?

- A. The new employee causes the distribution to become skewed to the right.
- B. The new employee causes the distribution to become skewed to the left.
- C. The new employee causes the distribution to become more symmetrical.
- D. The new employee causes the distribution to become less spread out.

31. The list below shows the number of baseball cards seven people own.

130, 142, 145, 145, 150, 163, 121

An eighth person owns 842 baseball cards. What effect does the eighth person have on the distribution of the data?

- A. The data distribution will become skewed to the left.
- B. The data distribution will become skewed to the right.
- C. The data distribution will become more symmetrical.
- D. The data distribution will become less spread.

32. A data set contains only one outlier. Which statistical measure will **most likely** remain the same if the outlier is removed?

- A. mean
- B. mode
- C. range
- D. standard deviation

33. Gabriella's quiz grades are shown below.

88, 92, 92, 96, 98

Gabriella scored a 20 on her sixth quiz. What effect does this score have?

- A. The low score causes the median to increase.
- B. The low score causes the median to decrease.
- C. The low score causes the mean to increase.
- D. The low score causes the mean to decrease.