

Math III Unit 1 Statistics Test Review**Find the mean, median, and mode of the data set. Round to the nearest tenth.**

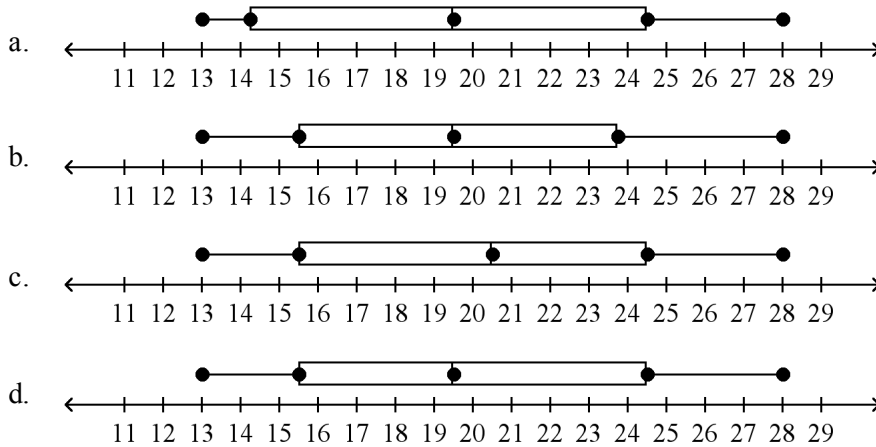
- _____ 1. 15, 9, 4, 2, 14, 14, 14, 15, 1, 1, 13
- | | | | |
|--|--|---|---|
| a. mean = 8.5,
median = 13,
mode = 8 | b. mean = 9.3,
median = 8,
mode = 14 | c. mean = 9.3,
median = 13,
mode = 14 | d. mean = 8.5,
median = 13,
mode = 14 |
|--|--|---|---|
- _____ 2. test scores on a math exam:
95, 93, 95, 78, 96, 80, 98, 95, 70, 80, 86, 70, 89, 91, 70, 88, 77, 92, 82, 95, 90, 90
- | | | | |
|--|--|--|--|
| a. mean = 79.2,
median = 89.5,
mode = 84 | b. mean = 86.4,
median = 89.5,
mode = 95 | c. mean = 86.4,
median = 84,
mode = 95 | d. mean = 79.2,
median = 89.5,
mode = 95 |
|--|--|--|--|

Find the outlier in the set of data.

- _____ 3. 5.4, 6.1, 5.1, 0.7, 4.7, 3.8, 3.4, 4.4
- | | | | |
|--------|--------|--------|--------|
| a. 4.7 | b. 0.7 | c. 6.1 | d. 4.4 |
|--------|--------|--------|--------|
- _____ 4. 16, 13, 38, 20, 12, 15, 10, 17
- | | | | |
|-------|-------|-------|-------|
| a. 38 | b. 16 | c. 10 | d. 15 |
|-------|-------|-------|-------|
- _____ 5. Over the first five years of owning her car, Gina drove about 12,000 miles the first year, 18,801 miles the second year, 12,475 the third year, 11,200 the fourth year, and 13,350 the fifth year.
- a.** Find the mean, median, and mode of this data.
- b.** Explain which measure of central tendency will best predict how many miles Gina will drive in the sixth year.
- | |
|--|
| a. mean = 13,565; median = 12,475; mode = 7,601; the median is the best choice because it is not skewed by the high outlier. |
| b. mean = 13,565; median = 12,475; no mode; the mean is the best choice because it is representative of the entire data set. |
| c. mean = 13,565; median = 12,475; no mode; the median is the best choice because it is not skewed by the high outlier. |
| d. mean = 12,475; median = 13,565; no mode; the mean is the best choice because it is representative of the entire data set. |

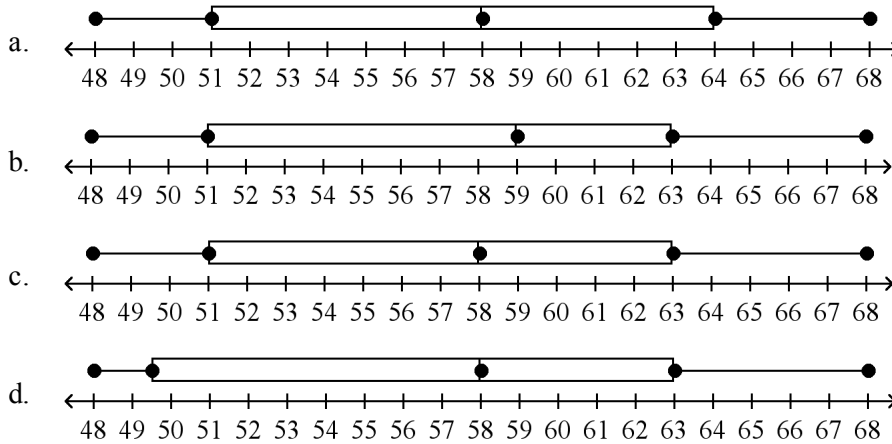
Make a box-and-whisker plot of the data.

_____ 6. 26, 15, 16, 13, 17, 28, 23, 22



_____ 7. Average daily temperatures in Tucson, Arizona, in December:

58, 56, 68, 65, 63, 48, 61, 58, 48, 48, 58, 54, 64, 48, 58, 68, 59, 52, 50, 63



What are the mean, variance, and standard deviation of these values? Round to the nearest tenth.

_____ 8. 5, 14, 12, 8, 8, 1

- | | |
|---|---|
| <p>a. mean = 8
variance = 18.32
standard deviation = 4.28</p> | <p>c. mean = 8
variance = 4.28
standard deviation = 18.32</p> |
| <p>b. mean = 8
variance = 2.07
standard deviation = 4.28</p> | <p>d. mean = 8
variance = 4.28
standard deviation = 2.07</p> |

9.

x	$x - \bar{x}$	$(x - \bar{x})^2$
30	-5.4	29.2
40	4.6	21.2
35	-0.4	0.2
47	11.6	134.6
25	-10.4	108.2

- a. mean = 35.40
variance = 58.68
standard deviation = 7.66
- b. mean = 35.40
variance = 7.66
standard deviation = 58.68
- c. mean = 33.8
variance = 227.9
standard deviation = 10.2
- d. mean = 33.8
variance = 104.6
standard deviation = 10932.8

Use a calculator to find the mean and standard deviation of the data. Round to the nearest tenth.

10. 7, 20, 13, 13, 7, 10, 9

- a. mean = 18
standard deviation = 4.7
- b. mean = 11.29
standard deviation = 17.89
- c. mean = 18
standard deviation = 22
- d. mean = 11.29
standard deviation = 4.3

11. Susan keeps track of the number of tickets sold for each play presented at The Community Theater. Within how many standard deviations from the mean do all the values fall?

87, 95, 100, 83, 115, 73, 110, 161, 73, 104, 67, 105

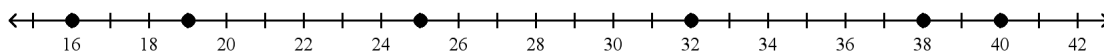
- a. 3
- b. 4
- c. 1
- d. 5

12. Mrs. Jones Algebra 2 class scored very well on yesterday's quiz. With one exception, everyone received an A. Within how many standard deviations from the mean do all the quiz grades fall?

91, 92, 94, 88, 96, 99, 91, 93, 94, 97, 95, 97

- a. 2
- b. 1
- c. 3
- d. 4

13. The graph below displays how many pieces of candy Timmy and his five friends each received last Halloween. Within how many standard deviations of the mean do the values fall?

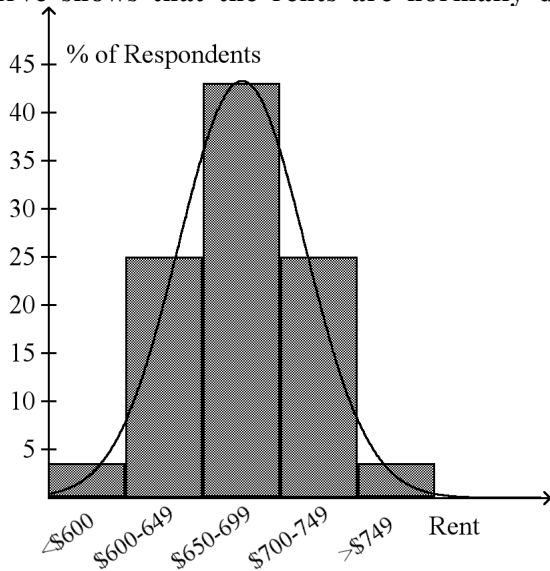


- a. 4
- b. 3
- c. 1
- d. 2

14. The scores on an exam are normally distributed, with a mean of 74 and a standard deviation of 6. What percent of the scores are greater than 80?

- a. 2.5%
- b. 16%
- c. 68%
- d. 84%

The bar graph shows the rents paid per month for apartments in an urban neighborhood. The curve shows that the rents are normally distributed.



- _____ 15. Estimate the percent of apartment residents who pay from \$600 to \$749 per month.
- a. 93% b. 68% c. 43% d. 25%
- _____ 16. Estimate the percent of apartment residents who pay less than \$600 per month.
- a. 99% b. 25% c. 68% d. 3%
- _____ 17. Estimate the percent of apartment residents who pay from \$700 to \$749 per month.
- a. 68% b. 3% c. 25% d. 93%
- _____ 18. The scores on a final exam were approximately normally distributed with a mean of 82 and a standard deviation of 11. If 85 students took the exam, and above a 60 is a passing grade, how many students failed the exam?
- a. 13 students c. 12 students
 b. 4 student d. 2 students
- _____ 19. Betty's Bite-Size Candies are packaged in bags. The number of candies per bag is normally distributed, with a mean of 50 candies and a standard deviation of 3. At a quality control checkpoint, a sample of bags is checked, and 4 bags contain fewer than 47 candies. How many bags were probably taken as samples?
- a. 25 bags b. 12 bags c. 8 bags d. 5 bags

- _____ 20. A grocery store will only accept yellow onions that are at least 3 in. in diameter. A grower has a crop of onions with diameters that are normally distributed, with a mean diameter of 3.5 in. and a standard deviation of 0.25 in. What percent of the onions will be accepted by the grocery store?
- a. 97.5% b. 34% c. 16% d. 2.5%
- _____ 21. The numbers of cookies in a shipment of bags are normally distributed, with a mean of 59 and a standard deviation of 4. What percent of bags of cookies will contain between 55 and 63 cookies?
- a. 34% b. 50% c. 68% d. 13.5%

Identify the sampling methods used in each of the following situations by choosing the correct multiple choice answer. Then state whether the sampling method has any bias, written by the question. Both parts must be correct to get full credit.

- _____ 22. A reporter asks people leaving a movie theater to take a survey about their television viewing habits.
- a. Random sampling c. Convenience sampling
b. Systematic sampling d. Self-selected sampling
- _____ 23. A psychologist uses a computer program to randomly select names from a list of students at a university. The members of the sample will take a survey about student housing at the university.
- a. Random sampling c. Systematic sampling
b. Convenience sampling d. Self-selected sampling

Determine if a question has bias, if it does pick a reason.

- _____ 24. Are college students better off studying useful subjects such as math or impractical subjects such as art history?
- a. Loaded Question c. Combines Two Issues
b. Leading Question d. No Bias
- _____ 25. Do you believe that this year's class field trip was fun and educational?
- a. Loaded Question c. Combines Two Issues
b. Leading Question d. No Bias

The heights of a group of 500 women are normally distributed with mean 65 inches and standard deviation 2.2 inches. Find the height for each of these z-scores. Round your answers to one decimal place.

- _____ 26. $z = 2$
- a. 35.6 c. 69.2
b. 68.4 d. 69.4

- _____ 27. $z = -2.3$
a. 60.51
b. 61.00
c. 59.94
d. 45.63

The mean commuting time for a resident of a certain metropolitan area is 38 minutes, with a standard deviation of 10 minutes. Assume that commuting times for this area are normally distributed.

- _____ 28. Find the z-score for a 23-minute commute
a. -0.1
b. 2
c. -1.5
d. -0.4

- _____ 29. Find the z-score for a 60-minute commute
a. 2.3
b. 2.2
c. 2.4
d. 0.8

- _____ 30. What is the probability that a commute for a randomly chosen resident will be between 28 minutes and 58 minutes?
a. 81.9%
b. 84.0%
c. 92.3%
d. 76.4%

Find the values of the 30th and 90th percentiles of the data.

- _____ 31. 129, 113, 200, 100, 105, 132, 100, 176, 146, 152
a. 30th percentile = 105;
90th percentile = 176
b. 30th percentile = 119;
90th percentile = 176
c. 30th percentile = 200;
90th percentile = 146
d. 30th percentile = 118;
90th percentile = 176
- _____ 32. 18, 9, 7, 5, 11, 7, 17, 20, 19, 2, 17, 12, 5, 1, 13, 12, 11, 15, 16, 20
a. 30th percentile = 9;
90th percentile = 20
b. 30th percentile = 9;
90th percentile = 19
c. 30th percentile = 11;
90th percentile = 19
d. 30th percentile = 7;
90th percentile = 20

- _____ 33. In this set of data, at what percentile is 10? At what percentile is 18?
10, 10, 10, 12, 14, 16, 16, 18, 18, 18
- | | |
|--|---|
| a. 10 is at the 10th percentile;
18 is at the 88th percentile. | c. 10 is at the 30th percentile;
18 is at the 90th percentile. |
| b. 10 is at the 20th percentile;
18 is at the 100th percentile. | d. 10 is at the 0th percentile;
18 is at the 70th percentile. |

Identify the type of sampling method used.

34. A restaurant chain's owners are trying to decide if they want to open up a franchise in your town. To help them decide, they want to find out how often people in your town go out to eat. A researcher interviews people leaving a local restaurant. Identify the sampling method used.
- | | |
|------------------|---------------|
| a. Convenience | c. Systematic |
| b. Self-Selected | d. Random |
35. A candidate for the Senate creates an automated message that calls every third listed phone number and reminds them to vote for him in the upcoming election.
- | | |
|------------------|---------------|
| a. Convenience | c. Systematic |
| b. Self-Selected | d. Random |

Is there any bias in the survey question? Explain.

36. What do you think would help students pay more attention in class?
- | | |
|---------------------|-----------------------|
| a. No Bias | c. Loaded Question |
| b. Leading Question | d. Two or More Issues |
37. Should a state have the power to kill a person for breaking the law?
- | | |
|---------------------|-----------------------|
| a. No Bias | c. Loaded Question |
| b. Leading Question | d. Two or More Issues |
38. Don't you think that Barry Sanders retired from the NFL too early?
- | | |
|---------------------|-----------------------|
| a. No Bias | c. Loaded Question |
| b. Leading Question | d. Two or More Issues |
- _____ 39. Students ask every 5th person to board the train what their favorite color is. Which type of study method is described in each situation?
- | | |
|--------------------------|---------------|
| a. Controlled Experiment | c. Survey |
| b. Observational Study | d. Simulation |

Name: _____

ID: A

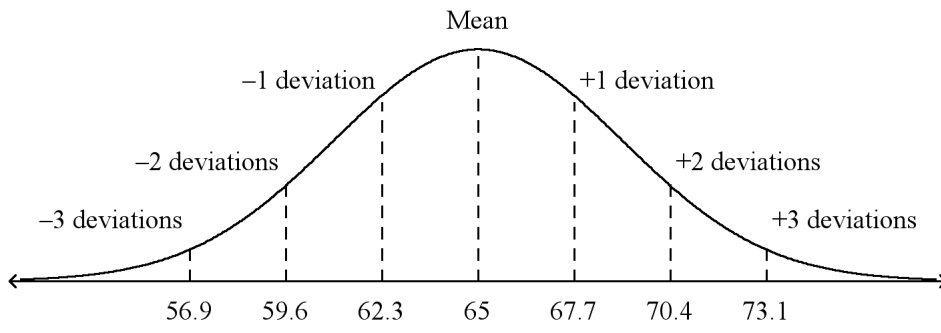
- _____ 40. Researchers randomly choose two groups from 15 volunteers. Over a period of 9 weeks, one group watches television before going to sleep, and the other does not. Volunteers wear monitoring devices while sleeping, and researchers record dream activity. Which type of study method is described in each situation?
- a. Controlled Experiment
 - b. Observational Study
 - c. Survey
 - d. Simulation
41. The average height of corn stalks in a field is 65 inches with a standard deviation of 2.7 inches. Sketch a normal curve labeling the horizontal axis at one, two, and three standard deviations from the mean.

Math III Unit 1 Statistics Test Review

Answer Section

1. C
2. B
3. B
4. A
5. B
6. D
7. C
8. A
9. A
10. D
11. A
12. A
13. D
14. B
15. A
16. D
17. C
18. D
19. A
20. A
21. C
22. C
23. A
24. A
25. C
26. D
27. C
28. C
29. B
30. A
31. B
32. B
33. A
34. A
35. C
36. A
37. C
38. B
39. C
40. A

41.



Math III Unit 1 Statistics Test Review [Answer Strip]

ID: A

- C 1.
- B 2.
- B 3.
- A 4.
- B 5.
- D 6.
- A 7.
- A 8.
- A 9.
- D 10.
- A 11.
- A 12.
- D 13.
- B 14.
- A 15.
- D 16.
- C 17.
- D 18.
- A 19.
- A 20.
- C 21.
- C 22.
- A 23.
- C 24.
- D 25.
- D 26.
- C 27.
- C 28.
- B 29.
- A 30.
- B 31.
- B 32.

A 33.

 A 40.

 C 39.