

TEST NAME: **S-ID.2**
TEST ID: **844082**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

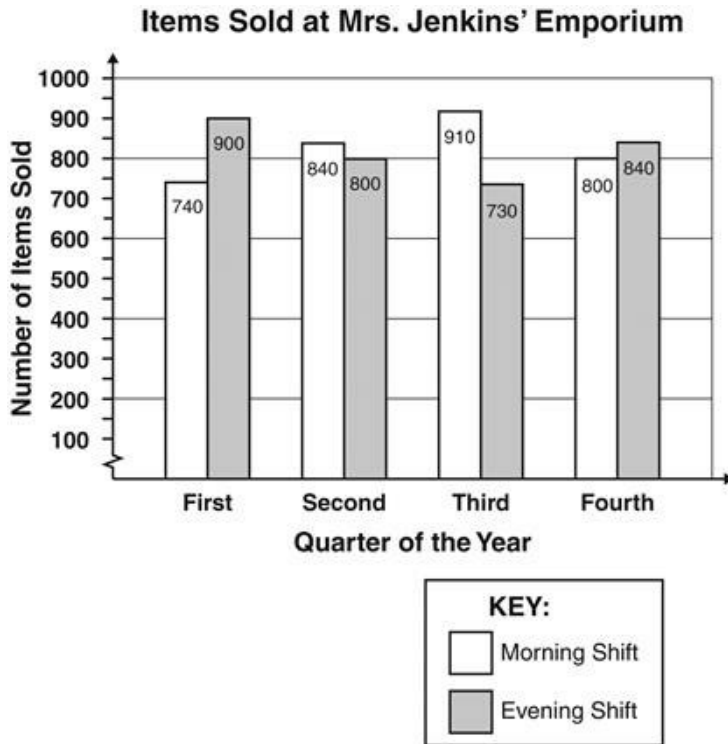
1. Two students' test grades are recorded below.

- Seth: {95, 94, 89, 90, 91, 96, 97, 93}
- Nicole: {71, 73, 71, 72, 98, 95, 86, 79}

Based on these data sets, which statement below is true?

- A. Seth had a higher standard deviation by about 2.2.
- B. Seth had a higher standard deviation by about 8.2.
- C. Nicole had a higher standard deviation by about 2.2.
- D. Nicole had a higher standard deviation by about 8.2.

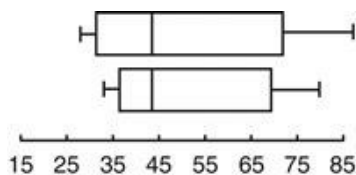
2. The number of items sold last year by the morning and evening shifts in Mrs. Jenkins' Emporium are displayed on the graph below.



According to the data, which statement is TRUE?

- A. The mean number of items sold was the same for every quarter.
- B. The evening shift had a higher number of items sold in each quarter of the year.
- C. The morning shift had a higher number of items sold in each quarter of the year.
- D. The mean quarterly amount sold by the evening shift was greater than the mean quarterly amount sold by the morning shift.

3. Parallel box-and-whisker plots made from information gathered during research are shown below.



What do the distributions have in common?

- A. range
 - B. median
 - C. minimum value
 - D. maximum value
4. Sam's scores for seven games of bowling are shown.
- 156, 177, 143, 151, 167, 161, 159
- If Sam had scored 3 more points in each game, how would it have changed his mean score?
- A. It would decrease by 3 points.
 - B. It would increase by 3 points.
 - C. It would increase by a factor of 3.
 - D. It would not change.
5. The table below shows the scores of two classes on a science project.

| Class A | Class B |
|---------|---------|
| 78 | 65 |
| 65 | 78 |
| 90 | 80 |
| 77 | 76 |
| 88 | 70 |
| 80 | 65 |
| 94 | 81 |
| 89 | 78 |
| 75 | 73 |
| 80 | 80 |

What is the difference between the two classes' mean scores?

- A. 3
 - B. 4
 - C. 7
 - D. 13
6. What measure is always equal to the 50th percentile of a data set?
- A. first quartile
 - B. mean
 - C. median
 - D. mode

7. The following list shows the number of baby goldfish born to each of 10 female goldfish.

4 2 6 5 7 3 4 5 4 9

What is the mode of this data?

- A. 4
 - B. 4.5
 - C. 4.6
 - D. 5
8. Cindy and John are members of an afterschool bowling club. Cindy played 9 games this week, while John played 8 games. The tables below display the number of points they scored in each game.

| | | | | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cindy's Score | 167 | 150 | 146 | 153 | 183 | 143 | 165 | 162 | 171 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | | | | | |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|
| John's Score | 163 | 145 | 165 | 160 | 175 | 161 | 150 | 169 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|

Based on the data listed, that both players have a median score of 162, and that both players are at a similar skill level, which statement **best** describes who did better over the course of the week?

- A. Cindy did better because she had the highest points scored in a single game.
- B. Both Cindy and John did equally well because they had the same median value of points scored.
- C. John did better because the standard deviation of his scores is less than the standard deviation of Cindy's scores.
- D. Cindy did better because the standard deviation of her scores is greater than the standard deviation of John's scores.

9. Four data sets are shown below.

Set 1: {10, 19, 38, 50, 51}

Set 2: {5, 21, 26, 39, 51}

Set 3: {9, 38, 50, 50, 51}

Set 4: {5, 28, 28, 28, 51}

Which data set has the largest standard deviation?

- A. Set 1
 - B. Set 2
 - C. Set 3
 - D. Set 4
10. In an election, the median number of votes a candidate received in 6 towns was 400. Which statement **MUST** be true about this election?
- A. The candidate received at least 400 votes in half of the 6 towns.
 - B. The candidate received exactly 400 votes in at least two of the towns.
 - C. The total number of votes the candidate received in the election was 2400.
 - D. The total number of votes received by all the candidates in the election was 2400.
11. What is the **approximate** difference between the medians of the two sets of data shown below?

Set 1: {2.99, 1.89, 3.99, 7.43}

Set 2: {2.99, 6.32, 2.87, 3.28}

- A. 0.21
- B. 0.36
- C. 0.73
- D. 0.94

12. Danny and Dennis are siblings who both own car dealerships. They tracked the number of customers who visited their respective dealerships over seven days and recorded the data in the chart below.

| Owner | Sun. | Mon. | Tues. | Wed. | Thurs. | Fri. | Sat. |
|--------|------|------|-------|------|--------|------|------|
| Danny | 15 | 28 | 8 | 29 | 9 | 20 | 17 |
| Dennis | 19 | 2 | 26 | 27 | 17 | 23 | 29 |

What is the difference between the interquartile range for the two sets of data?

- A. 8
 - B. 9
 - C. 10
 - D. 19
13. Two teachers recorded test scores for a small group of students.

| | | | | | | | | |
|------------------|----|----|----|----|----|----|----|-----|
| Teacher A | 69 | 73 | 79 | 83 | 93 | 97 | 98 | 100 |
| Teacher B | 65 | 70 | 73 | 75 | 90 | 93 | 94 | 95 |

What is the **approximate** difference in the standard deviation of the two teachers' test scores?

- A. 0.06
 - B. 0.14
 - C. 0.22
 - D. 0.48
14. The table shows the mean and median price of the items Adriana sold on each day of her yard sale.

Adriana's Yard Sale Statistics

| | Mean Price of Items Sold | Median Price of Items Sold |
|------------|--------------------------|----------------------------|
| First Day | \$2.50 | \$2.00 |
| Second Day | \$7.50 | \$6.00 |

Of the items she sold on both days combined, she sold 40% on the first day. If Adriana sold at least 2 items each day, which statement must be true about the prices of all the items she sold during her sale?

- A. The mean of the prices of all the items equals \$5.00
- B. The mean of the prices of all the items exceeds \$5.00
- C. The median of the prices of all the items equals \$4.00
- D. The median of the prices of all the items exceeds \$4.00

15. The data below show the balances of Albert's and Robin's savings accounts over the last eight months.

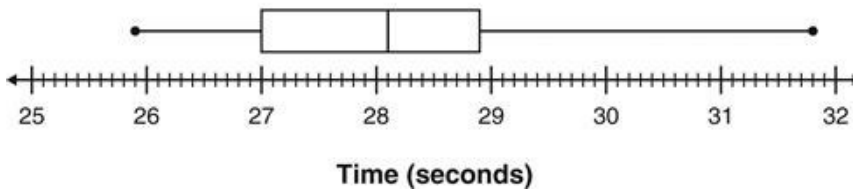
| | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|-----|-----|
| Albert's Savings (in dollars) | 610 | 510 | 490 | 590 | 750 | 650 | 720 | 610 |
|--|-----|-----|-----|-----|-----|-----|-----|-----|

| | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|
| Robin's Savings (in dollars) | 640 | 620 | 780 | 750 | 680 | 520 | 540 | 640 |
|---|-----|-----|-----|-----|-----|-----|-----|-----|

Which statement best compares the variability between the two savings account balances?

- A. Neither Albert's nor Robin's savings have variability.
 - B. Albert's savings account balances have more variability because his account has the lowest balance of \$490.
 - C. Robin's savings account balances have more variability because her account has the highest balance of \$780.
 - D. Albert's and Robin's savings account balances have similar variability because the ranges of their balances are the same.
16. Swimmers often use a technique referred to as taper at the end of their training season. During taper, they swim fewer practice laps so that their times improve. The plots below show the 50-yard freestyle times for twelve girls on a swim team before and after taper.

**50-Yard Freestyle Swim Times
(before taper)**



**50-Yard Freestyle Times
(after taper)**

| Stem | Leaf |
|------|-------|
| 25 | 0 2 |
| 26 | 1 1 |
| 27 | 4 6 6 |
| 28 | 6 7 |
| 29 | 3 |
| 30 | 4 9 |

| |
|------------------------------|
| KEY |
| 27 6 represents 27.6 seconds |

By how much did the median time on the 50-yard freestyle swim improve with the use of taper?

- A. 0.5 second
- B. 0.6 second
- C. 0.9 second
- D. 1.5 second

17. Greg measured the lengths of the vehicles in the school parking lot. He recorded the data in the table below.

| Type of Vehicle | Length (inches) | | | | | | | | | |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cars | 160 | 176 | 173 | 182 | 163 | 185 | 180 | 172 | 175 | 174 |
| Other Vehicles | 192 | 95 | 180 | 202 | 98 | 208 | 200 | 105 | 210 | 190 |

What is the difference in the interquartile range for the 2 types of vehicles?

- A. 97
 - B. 89
 - C. 8
 - D. 6
18. The prices for several items at two stores are given below.

| Store X | Store Y |
|---------|---------|
| \$2.81 | \$3.39 |
| \$2.61 | \$2.68 |
| \$2.96 | \$2.27 |
| \$3.03 | \$1.59 |
| \$4.25 | \$2.83 |

Based on this data, which statement is true?

- A. The standard deviation for Store X is greater than the standard deviation for Store Y by about 0.03.
- B. The standard deviation for Store X is greater than the standard deviation for Store Y by about 0.3.
- C. The standard deviation for Store X is less than the standard deviation for Store Y by about 0.03.
- D. The standard deviation for Store X is less than the standard deviation for Store Y by about 0.3.

19. The data shows the test scores of four different classes.

- Algebra: {87, 91, 64, 88, 74}
- Geometry: {98, 86, 84, 91, 79}
- Statistics: {87, 72, 84, 88, 91}
- Pre-Algebra: {63, 82, 78, 71, 74}

Which class had the smallest interquartile range?

- A Algebra
- B Geometry
- C Statistics
- D Pre-Algebra

20. Kaitlyn, Mara, and Paul recorded how many minutes they watched television each day for 2 weeks. Their results are recorded in the table below.

| | | | | | | | | | | | | | | |
|----------------|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|-----|-----|----|
| Kaitlyn | 110 | 140 | 150 | 90 | 150 | 30 | 160 | 20 | 100 | 180 | 150 | 70 | 60 | 50 |
| Mara | 30 | 40 | 70 | 40 | 35 | 60 | 20 | 10 | 80 | 0 | 55 | 25 | 40 | 45 |
| Paul | 35 | 85 | 70 | 80 | 10 | 55 | 170 | 40 | 60 | 30 | 40 | 110 | 100 | 35 |

Which statement is true?

- A Kaitlyn’s data has a greater interquartile range than Mara’s data.
- B Mara’s data has a greater interquartile range than Kaitlyn’s data.
- C Paul’s data has a greater interquartile range than Kaitlyn’s data.
- D Mara’s data has a greater interquartile range than Paul’s data.

21. Two data sets are shown below.

Data Set F : {−6, −3, 0, 3, 6}

Data Set G : {−7, −5, 0, 5, 7}

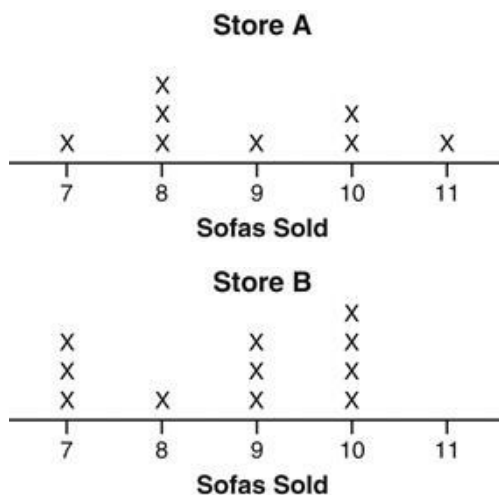
Which of the following statements about data sets F and G is true?

- A The mean of F is less than the mean of G .
- B The median of G is less than the median of F .
- C The variance of G is less than the variance of F .
- D The variance of F is less than the variance of G .

22. In an election, the median number of votes a candidate received in 6 towns was 250. Which statement MUST be true about this election?

- A The candidate received at least 250 votes in half of the 6 towns.
- B The candidate received exactly 250 votes in at least two of the towns.
- C The total number of votes the candidate received in the election was 1500.
- D The total number of votes received by all the candidates in the election was 1500.

23. The mean hourly salary of the 10 employees at a fast-food restaurant is \$8.25. One of the employees earning \$6.50 an hour leaves the company, and another employee is hired at \$5.50 an hour. What is the new mean salary of the employees?
- A. \$7.25
 B. \$7.75
 C. \$8.00
 D. \$8.15
24. A furniture store recorded the number of sofas sold by the sales associates at two different stores during one month. The results are shown in the line plots below.



Which of the following statements is true about the data for these two stores?

- A. The data for store A has an outlier.
 B. The data for store B has an outlier.
 C. The range for store A is greater than the range for store B.
 D. The range for store B is greater than the range for store A.
25. The data sets show the test scores of a group for the last two tests.

Test 1: {75, 75, 85, 80, 65, 70, 65}
 Test 2: {95, 85, 85, 90, 90, 95, 100}

Which data set had the smaller standard deviation?

- A. Test 1 with a standard deviation of 7.5
 B. Test 2 with a standard deviation of 7.5
 C. Test 1 with a standard deviation of 5.6
 D. Test 2 with a standard deviation of 5.6

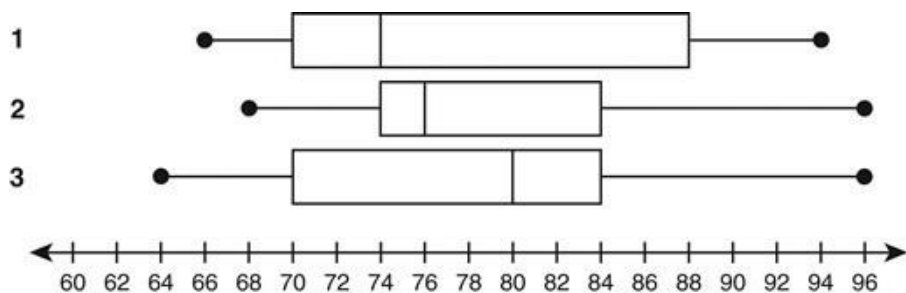
26. The data below shows the number of hours boys and girls spent studying for a test.

Boys: {2, 1, 3, 1, 2, 2}
 Girls: {4, 1, 3, 2, 2, 4}

What is the difference in the interquartile range between the girls and boys?

- A. 1
- B. 2
- C. 3
- D. 5

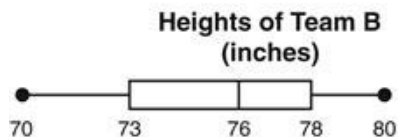
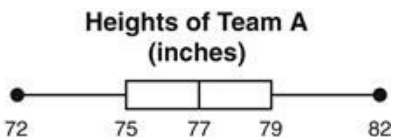
27. The box-and-whisker plots below show a summary of the test results earned by students in three of Mr. Rafiq's classes.



Which box-and-whisker plot or plots represent a class in which more than $\frac{1}{2}$ of the students scored 78 or greater?

- A. Plot 1 only
- B. Plot 3 only
- C. Plots 1 and 2
- D. Plots 2 and 3

28. The box-and-whisker plots below show the distribution of the heights, in inches, of the members of two basketball teams.



Which statement is true?

- A. The median height of Team A is equal to the median height of Team B.
- B. The shortest player on Team B is 2 inches taller than the shortest player on Team A.
- C. The range of the heights of Team A is equal to the range of the heights of Team B.
- D. The tallest player on Team A is 2 inches shorter than the tallest player on Team B.

29. Ben wants to compare the scores of this year's basketball games to the scores of last year's games. He made the following double stem-and-leaf plot to make his comparison.

| Comparison of Basketball Scores Between the Last Two Years | | |
|--|------|-----------|
| Last Year | Stem | This Year |
| 995 | 0 | |
| 97753 | 1 | 999 |
| 6654 | 2 | 7889 |
| 9 | 3 | 456778 |
| | 4 | 233 |
| | 5 | 2 |

What is the difference between the median score this year and the median score last year?

- A. 16
- B. 17
- C. 18
- D. 20

30.

The data sets below represent the results of surveys conducted with ten high school students to determine the number of hours per week they spend studying for their classes.

Algebra {3, 0, 8, 7, 4, 1, 9, 7, 4, 8}

Chemistry {5, 7, 3, 2, 8, 1, 2, 9, 11, 6}

English {2, 4, 0, 9, 1, 2, 6, 3, 10, 2}

US History {9, 1, 5, 2, 0, 0, 4, 2, 7, 3}

Which data set has the greatest interquartile range?

- A. Algebra
- B. Chemistry
- C. English
- D. US History

31. The data below represents the number of minutes Jake and Sarah spent doing chores each day for a week.

Jake: 80, 85, 90, 90, 90, 95, 98

Sarah: 75, 80, 80, 90, 92, 94, 95

Which statement is true about the data?

- A. The median number of minutes for Jake is higher than the median number of minutes for Sarah.
 - B. The mean number of minutes for Sarah is higher than the mean number of minutes for Jake.
 - C. The mean number of minutes for Jake and Sarah are equal, but the median number of minutes are different.
 - D. The median number of minutes for Jake and Sarah are equal, but the mean number of minutes are different.
32. The high temperatures, in degrees Fahrenheit, of several cities were recorded below over a 4-day period.

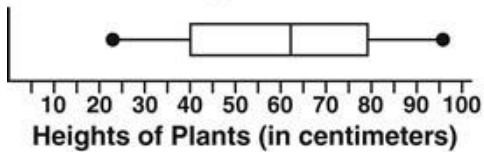
| Monday | Tuesday | Wednesday | Thursday |
|-------------------------------|------------------------------|-------------------------------|-------------------------------|
| 72, 73, 79, 57, 63, 61, 87 | 70, 67, 79, 55 67, 65, 89 | 67, 71, 84, 55, 68, 67, 87 | 65, 73, 81, 54, 69, 65, 85 |

Which day had the greatest mean temperature?

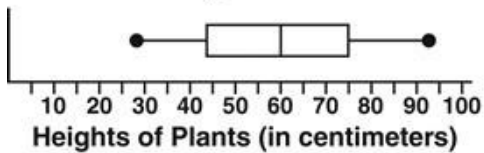
- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday

33. The box-and-whisker plots below show the distribution of heights of plants (in centimeters) in the three rows of a garden.

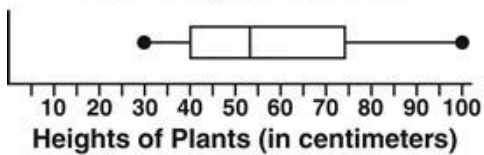
Plant Heights in Row 1



Plant Heights in Row 2



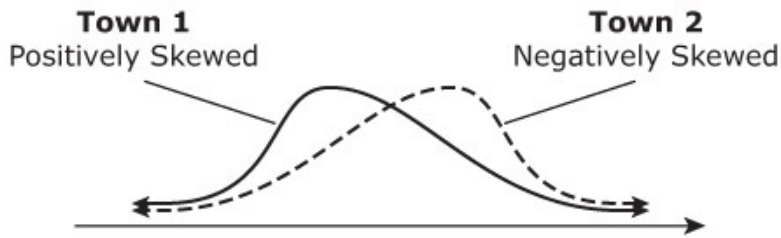
Plant Heights in Row 3



Which list shows the rows in order from least to greatest range of plant heights?

- A. Row 3, Row 2, Row 1
 - B. Row 2, Row 3, Row 1
 - C. Row 2, Row 1, Row 3
 - D. Row 1, Row 2, Row 3
34. The mean (average) score on a test taken by 10 students was 75.0. An 11th student took a makeup test and got a score of 86. If the makeup test score is averaged in with the other 10 scores, what is the increase in the mean score?
- A. 1.0
 - B. 1.1
 - C. 1.2
 - D. 1.3

35. The sale prices of houses in two towns are said to have positively and negatively skewed distribution such as the ones illustrated below.



Which statement must be true?

- A. The median of Town 1 is smaller than the median of Town 2.
 - B. The mean of Town 1 is smaller than the mean of Town 2.
 - C. The medians of Town 1 and Town 2 are the same.
 - D. The means of Town 1 and Town 2 are the same.
36. The table below compares the annual salaries of 5 employees from two different companies. At which company would an employee be expected to be paid a higher salary and which measure of central tendency is the best indication of this conclusion?

| | | | | | |
|-------------------------------|--------|--------|--------|--------|--------|
| Company A (in dollars) | 55,000 | 37,000 | 29,000 | 32,000 | 25,000 |
| Company B (in dollars) | 35,000 | 38,000 | 22,000 | 30,000 | 34,000 |

- A. company A based on the mean
- B. company B based on the mean
- C. company A based on the median
- D. company B based on the median

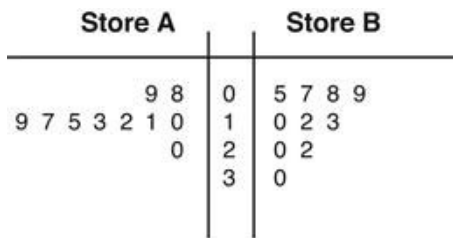
37. The data below shows the rowing times for members of a local boat racing club.

| Men | Women |
|----------|----------|
| 7 m 20 s | 7 m 46 s |
| 7 m 25 s | 7 m 47 s |
| 7 m 26 s | 7 m 39 s |
| 7 m 28 s | 7 m 49 s |
| 7 m 28 s | 7 m 49 s |
| 7 m 27 s | 7 m 50 s |
| 7 m 24 s | 7 m 51 s |
| 7 m 26 s | 7 m 57 s |
| 7 m 19 s | 7 m 49 s |

What is the **approximated** difference between the men's mean rowing time and the women's fastest rowing time?

- A. 12 seconds
 - B. 14 seconds
 - C. 20 seconds
 - D. 23 seconds
38. In an election, the median number of votes a candidate received in 4 towns was 250. Which statement must be true about this election?
- A. The candidate received 250 votes total in 4 towns.
 - B. The candidate received at least 250 votes in half of the 4 towns.
 - C. The total number of votes the candidate received in the election was 1000.
 - D. The total number of votes received by all the candidates in the election was 1000.

39. The following graph displays the daily number of shoppers in two stores, A and B, over a ten-day period.

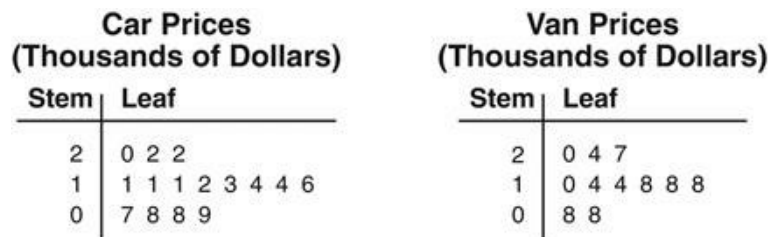


Key: 1|1|2 = 12

What can you conclude from the data?

- A. Store A has a higher mean than Store B.
- B. Store B has a higher mean than Store A.
- C. Store A and Store B have the same median.
- D. Store A and Store B have the same maximum.

40. The stem-and-leaf plots below show the prices of cars and vans at a dealership, in thousands of dollars.



KEY: 1|4 represents \$14,000

What is the difference between the range of the van prices and the range of the car prices?

- A. \$4,000
- B. \$5,000
- C. \$6,000
- D. \$7,000

41. The data set below shows test scores for two different classes.

| Class 1 | Class 2 |
|--|--|
| 75, 80, 83, 77, 97, 51, 67, 87, 91, 77 | 86, 79, 94, 83, 81, 77, 72, 75, 92, 90 |

Which statement is true?

- A. The interquartile range of Class 1 is 12, and the interquartile range of Class 2 is 13.
- B. The interquartile range of Class 1 is 13, and the interquartile range of Class 2 is 12.
- C. The interquartile range of Class 1 is 22, and the interquartile range of Class 2 is 46.
- D. The interquartile range of Class 1 is 46, and the interquartile range of Class 2 is 22.

42. The table below shows the heights, in feet, of the five tallest buildings in three cities in the United States.

| New York | Chicago | Boston |
|-----------------|----------------|---------------|
| 1,250 | 1,451 | 790 |
| 1,200 | 1,389 | 749 |
| 1,046 | 1,136 | 614 |
| 1,046 | 1,127 | 601 |
| 977 | 1,007 | 600 |

Which statement is true about the data?

- A. The interquartile range for New York's buildings is less than the interquartile range for Boston's buildings.
- B. The interquartile range for Chicago's buildings is less than the interquartile range for Boston's buildings.
- C. The interquartile range for New York's buildings is greater than the interquartile range for Chicago's buildings.
- D. The interquartile range for Chicago's buildings is greater than the interquartile range for New York's buildings.

43. It snowed each day during the first 2 weeks of January. The amount of snowfall for these 2 weeks is listed in the chart below.

Snowfall Amounts

| Date | Snowfall (inches) |
|------------|-------------------|
| January 1 | 2.5 |
| January 2 | 1.25 |
| January 3 | 2 |
| January 4 | 3 |
| January 5 | 2.25 |
| January 6 | 3.5 |
| January 7 | 2.75 |
| January 8 | 1.25 |
| January 9 | 1.5 |
| January 10 | 2.5 |
| January 11 | 1.75 |
| January 12 | 1.5 |
| January 13 | 4.5 |
| January 14 | 2.5 |

What is the mode of the snowfall amounts?

- A. 1.5 inches
 - B. 2.25 inches
 - C. 2.5 inches
 - D. 4.5 inches
44. The table below shows amounts customers spent at Michael's Shoe Store over a two-day period. The mean for both days was the same.

Michael's Shoe Store Sales

| Day 1 | Day 2 |
|-------|-------|
| \$96 | \$110 |
| \$80 | \$98 |
| \$100 | \$110 |
| \$110 | \$100 |
| \$90 | \$85 |
| \$140 | \$140 |
| \$92 | \$98 |
| \$145 | \$80 |
| \$70 | \$75 |
| \$120 | ? |

What is the missing value for day two?

- A. \$98
- B. \$120
- C. \$147
- D. \$157

45. A store had five different lengths of extension cords for sale. Four of the lengths were 9 feet, 10 feet, 12 feet, and 8 feet. The range of the lengths of all the extension cords was 6 feet. Which could be the length of the fifth size of extension cords?
- A. 2 feet
 - B. 6 feet
 - C. 15 feet
 - D. 18 feet

46. Jim and Carol recorded gas prices at five stations for their own towns in the table below.

| Gas Prices | | | | | |
|------------|-----------|-----------|-----------|-----------|-----------|
| Name | Station 1 | Station 2 | Station 3 | Station 4 | Station 5 |
| Jim | \$3.45 | \$3.54 | \$3.71 | \$3.62 | \$3.49 |
| Carol | \$3.89 | \$3.65 | \$3.39 | \$3.48 | \$3.49 |

Which person's town had the lower mean for gas prices and by **about** how much?

- A. Jim, by \$0.02
 - B. Carol, by \$0.02
 - C. Jim, by \$0.06
 - D. Carol, by \$0.06
47. The stem-and-leaf plot shows the number of stories in the 10 tallest high-rise buildings for City 1 and City 2.

Ten Tallest High-Rise Buildings

| City 1 | Stem | City 2 |
|-----------|------|---------|
| 9 9 8 6 5 | 2 | 5 6 |
| 2 1 | 3 | 0 0 0 2 |
| 4 1 2 | 4 | 0 0 0 0 |

KEY: |3|0 represents 30
2|4| represents 42

Which statement is supported by the data?

- A. City 1 has the building with the least stories.
- B. City 2 has the building with the most stories.
- C. There are fewer buildings with at least 40 stories in City 1.
- D. There are more buildings with less than 30 stories in City 2.

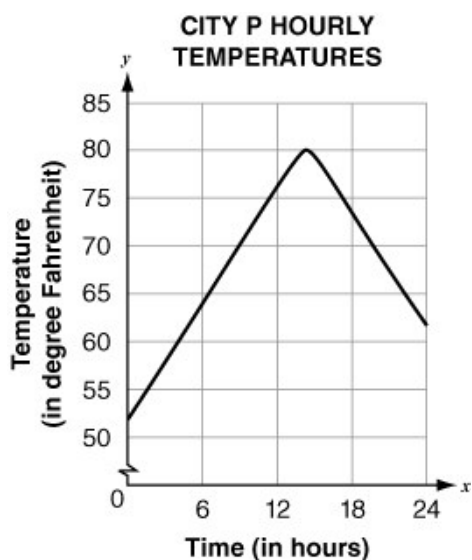
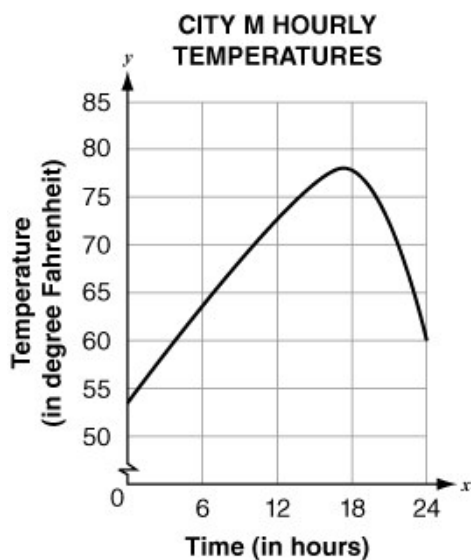
48. The two sets of data represent the points scored by two basketball teams.

| | Points Scored | | | | | |
|--------|---------------|----|----|----|----|----|
| Team A | 45 | 55 | 49 | 64 | 39 | 66 |
| Team B | 38 | 53 | 58 | 49 | 55 | 61 |

What is the difference between the upper-quartile values for the two sets of scores?

- A. 2
- B. 4
- C. 5
- D. 6

49. The temperatures in two different cities were recorded each hour throughout the same 24-hour period. The points representing these data were connected to form the curves shown in the graphs below.



Which statement **best** describes which city experienced the most extreme temperature change throughout this 24-hour period?

- A. City P had a more extreme temperature change because the temperatures have a larger range.
- B. City M had a more extreme temperature change because the median temperature occurs later in the day.
- C. City P had a more extreme temperature change because the temperatures reach a higher maximum point in this city.
- D. City M had a more extreme temperature change because the range of temperatures is larger for this city after reaching the maximum.

50. The prices of 15 baseball cards are listed below.

\$1, \$8, \$1, \$2, \$2, \$3, \$12, \$10,
\$5, \$8, \$6, \$7, \$7, \$2, \$10

How much greater, in dollars, is the median price than the mode of the prices listed?

- A. \$4
- B. \$5
- C. \$8
- D. \$9

51. If 10 is added to each observation in the following data set, what is the relationship between the original standard deviation and the new standard deviation?

1 5 9 15 27 32

- A. The original standard deviation is 10 times the new standard deviation.
- B. The original standard deviation is equal to the new standard deviation.
- C. The new standard deviation is 10 times the original standard deviation.
- D. The new standard deviation is 10 times more than the original standard deviation.

52. Which statement is true about the data listed below?

9, 12, 6, 7, 8, 9, 3

- A. The median is less than the mode but greater than the mean.
- B. The mean is less than the mode but greater than the median.
- C. The mean is less than the median but greater than the mode.
- D. The mode is less than the median but greater than the mean.

53. The table below shows the number of homes sold in South County during the months of October through December over a 5-year period.

South County Home Sales

| Year | Oct | Nov | Dec |
|------|-----|-----|-----|
| 2002 | 196 | 174 | 194 |
| 2003 | 214 | 155 | 206 |
| 2004 | 184 | 173 | 202 |
| 2005 | 146 | 136 | 156 |
| 2006 | 151 | 123 | 143 |

What is the difference in the mean number of homes sold in October and the mean number of homes sold in December over the 5-year period?

- A. 2
- B. 5
- C. 10
- D. 18

54. The chart compares the average rainfall per month, in inches, for Jacksonville and Key West, Florida.

Average Rainfall in Jacksonville, FL
and Key West, FL (in inches)

| Month | Jacksonville | Key West |
|-------|--------------|----------|
| Jan | 3.0 | 2.0 |
| Feb | 3.7 | 1.9 |
| Mar | 3.8 | 1.7 |
| Apr | 3.0 | 1.6 |
| May | 3.6 | 3.9 |
| Jun | 5.3 | 5.3 |
| Jul | 6.2 | 3.7 |
| Aug | 7.4 | 4.9 |
| Sep | 7.8 | 6.5 |
| Oct | 3.7 | 4.3 |
| Nov | 2.0 | 2.5 |
| Dec | 2.6 | 1.8 |

Which claim can be supported by this data?

- A. The range of monthly rainfalls is greater for Jacksonville than Key West.
- B. The mean monthly rainfall is greater for Key West than for Jacksonville.
- C. Key West and Jacksonville received the same amount of rainfall in May.
- D. The median monthly rainfall is greater for Key West than for Jacksonville.

55. Which set of numbers has the mean with the greatest value?

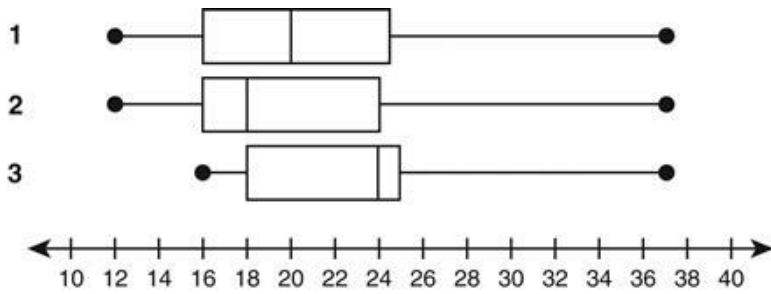
- I $\{-9, -7, 0, 4\}$
- II $\{-7, -4, 6, 5\}$
- III $\{1, 0.1, 0.05, 0.05\}$
- IV $\left\{0, \frac{1}{2}, 1\frac{1}{2}, 2\right\}$

- A. I
- B. II
- C. III
- D. IV

56. Tracey and Mark recorded the number of customers waiting in the first 5 checkout lines at two different grocery stores at the same time of day on the same day of the week. Tracey found $\{2, 2, 3, 3, \text{ and } 4\}$ waiting customers in store A. In store B, Mark found $\{3, 4, 4, 4, \text{ and } 5\}$ waiting customers. Which one of the following statements is true?

- A. Store A has a spread of 2.8.
- B. Stores A and B have an equal spread.
- C. Store B has a greater spread than store A.
- D. Store B has a spread of 4.

57. Which of the box-and-whisker plots represent data that has a median of 18 and a lower quartile of 16?



- A. Plot 2
- B. Plot 3
- C. Plots 1 and 2
- D. Plots 1 and 3

58. Two different teams, composed of 6 team members, had a friendly competition to see how many times each player could hit the target with a softball. Each player had 7 chances. The table below shows the number of target hits each baseball player made compared to each softball player.

Number of Successful Hits

| Baseball Players | Softball Players |
|------------------|------------------|
| 0 | 3 |
| 2 | 3 |
| 4 | 4 |
| 5 | 4 |
| 6 | 4 |
| 6 | 5 |

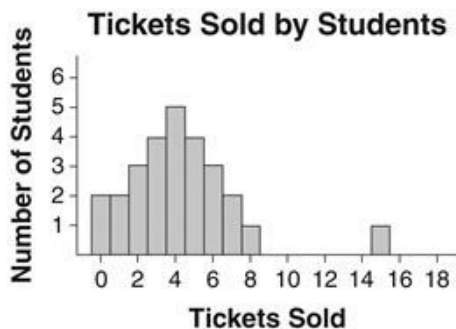
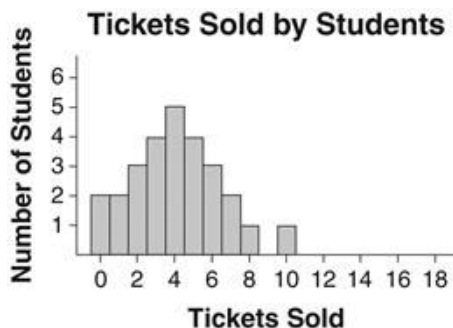
What can be concluded from the table above?

- A. The baseball players are just as accurate as the softball players, when you look at the average of each group.
- B. The baseball and softball players' spread of data are very close.
- C. The mode of successful hits of the softball players' is the same as the baseball players'.
- D. The softball players are more accurate throwers than the baseball players, when you look at the average of each group.

59. In a cross-country race with 35 participants, the mean finish time was 21 minutes. Which statement must be true?

- A. The most common finish time was 21 minutes.
- B. At least one participant finished in exactly 21 minutes.
- C. Over half of the participants finished in less than 21 minutes.
- D. If no participant finished in less than 21 minutes, then everyone finished in exactly 21 minutes.

60. What is the difference between the histograms below?



- A. the maximum number of tickets sold
- B. the minimum number of tickets sold
- C. the median number of tickets sold
- D. the mode number of tickets sold

61. The stem-and-leaf plots below show the scores of 15 ninth-graders and 15 tenth-graders in a competition.

Competition Scores for Ninth Graders

| Stem | Leaf |
|------|-----------|
| 5 | 2 3 4 4 4 |
| 4 | 2 4 6 8 9 |
| 3 | 3 5 5 5 5 |

Competition Scores for Tenth Graders

| Stem | Leaf |
|------|---------------|
| 5 | 4 6 7 8 8 9 |
| 4 | 1 2 2 2 7 8 9 |
| 3 | 8 9 |

KEY: 5|6 represents 56

How much greater is the mode of the tenth-graders' scores than the mode of the ninth-graders' scores?

- A. 2
- B. 4
- C. 5
- D. 7

62. A survey asked the ages of people and whether they purchase diet soda or regular soda. The results are shown in table below.

Ages of People Surveyed

| | | | | | | | | | | |
|---------------------|----|----|----|----|----|----|----|----|----|----|
| Diet Soda | 26 | 42 | 41 | 18 | 39 | 22 | 30 | 34 | 37 | 22 |
| Regular Soda | 16 | 48 | 32 | 21 | 26 | 41 | 35 | 22 | 46 | 27 |

What is the difference in the median age of those who purchase diet soda to those who purchase regular soda?

- A. 0.3 years
- B. 2.5 years
- C. 4.5 years
- D. 5.5 years

63. Which set of numbers has the mean with the least value?

- I $\{-9, -7, 0, 4\}$
- II $\{-7, -4, 6, 5\}$
- III $\{1, 0.1, 0.05, 0.05\}$
- IV $\left\{0, \frac{1}{2}, 1\frac{1}{2}, 2\right\}$

- A. I
- B. II
- C. III
- D. IV

64. In an election, the median number of votes a candidate received in 6 towns was 300. Which statement **MUST** be true about this election?

- A. The candidate received at least 300 votes in half of the 6 towns.
- B. The candidate received exactly 300 votes in at least two of the towns.
- C. The total number of votes the candidate received in the election was 1800.
- D. The total number of votes received by all the candidates in the election was 1800.

65. In an election, the median number of votes a candidate received in 5 towns was 300. Which statement **must** be true about this election?

- A. The total number of votes received by all candidates was 1500.
- B. The candidate received at least 300 votes in half of the 5 towns.
- C. The candidate received exactly 300 votes in at least 2 of the towns.
- D. The total number of votes the candidate received in the election was 1500.

66. A beauty shop owner collected data on various services provided to clients. The table below shows the number of haircuts and highlights that each hairstylist provided to clients last month.

Beauty Shop Services

| Hairstylist | Haircuts | Highlights |
|-------------|----------|------------|
| Anna | 20 | 20 |
| Cara | 72 | 25 |
| Darren | 35 | 36 |
| Joyce | 42 | 21 |
| Kiana | 64 | 46 |
| Layla | 42 | 48 |
| Millie | 71 | 37 |
| Niki | 66 | 50 |
| Ray | 64 | 51 |
| Reza | 64 | 52 |
| Steve | 44 | 47 |
| Tonya | 46 | 46 |

The owner concluded that the median number of haircuts and the median number of highlights provided by the hairstylists was 46. What error did the owner make?

- A. She confused the range and the median for each set of data.
 - B. She deleted repeating numbers when ordering the numbers.
 - C. She confused the mode for the median in the haircut data set.
 - D. She chose the number in the middle of the table as the median.
67. Each player on the boys' and girls' basketball teams recorded the total number of points he or she scored the entire season.

| | | | | | | | | | | |
|--------------------|----|----|----|----|----|----|----|----|----|----|
| Boys' Team | 35 | 21 | 40 | 17 | 37 | 25 | 42 | 23 | 16 | 25 |
| Girls' Team | 18 | 22 | 15 | 50 | 48 | 32 | 31 | 25 | 26 | 42 |

What is the difference between the interquartile ranges of the two teams?

- A. 9
- B. 7
- C. 4
- D. 3

68. Two schools each sent a four-member team to compete in a one-lap swim competition. The table below lists the number of minutes each swimmer took to swim one lap.

| Swimmer | Time (in minutes) |
|----------------|--------------------------|
| 1 | 2.11 |
| 2 | 1.89 |
| 3 | 1.90 |
| 4 | 2.06 |

| Swimmer | Time (in minutes) |
|----------------|--------------------------|
| 1 | 1.88 |
| 2 | 1.96 |
| 3 | 2.23 |
| 4 | 1.78 |

What was the faster team's mean, one-lap swimming time and which team does that time belong to?

- A. 1.99 minutes; Team A
- B. 1.99 minutes; Team B
- C. 1.96 minutes; Team A
- D. 1.96 minutes; Team B

69. A dealership has an equal number of cars and trucks. The table shows the mean and the range of the mileage statistics for each type of vehicle.

Vehicle Mileage Statistics
(in miles)

| Type | Mean | Range |
|--------|--------|--------|
| Cars | 40,000 | 50,000 |
| Trucks | 60,000 | 70,000 |

Which statement about the mileages of all the vehicles at the dealership is not true?

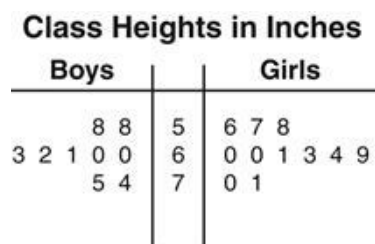
- A. The mean of the mileages is at least 50,000 miles.
- B. The range of the mileages is at least 60,000 miles.
- C. The mean of the mileages equals 60,000 miles.
- D. The range of the mileages is between 50,000 miles and 130,000 miles.

70. Given this back-to-back stem plot, what can be concluded about annual salaries, in thousands of dollars, of professors in the two different areas?



Key: 4 | 5 | = \$45,000

- A. New York salaries are higher.
 B. California salaries are higher.
 C. They are approximately the same.
 D. They have the same median.
71. Andy recorded the heights of the boys and girls in his class in the double stem-and-leaf plot.



| KEY |
|--------------------|
| 5 6 represents 56 |
| 8 5 represents 58 |

What is the difference in height between the tallest boy and the tallest girl?

- A. 2 inches
 B. 4 inches
 C. 13 inches
 D. 19 inches
72. A class of 27 students had a mean of 83 on a math quiz. The 12 girls in the class had a mean of 80.5 on the quiz. What was the mean of the boys' scores?
- A. 75
 B. 77.5
 C. 85
 D. 85.5

73. The chart below shows the number of cars sold by a large dealer in the first six months of the year for 2 years.

Dealership Car Sales for First 6 Months

| Month | Number Sold in 2007 | Number Sold in 2008 |
|----------|---------------------|---------------------|
| January | 155 | 143 |
| February | 146 | 144 |
| March | 156 | 156 |
| April | 155 | 155 |
| May | 143 | 144 |
| June | 157 | 157 |

What is the difference between the mode of the 2007 data and the mode of the 2008 data?

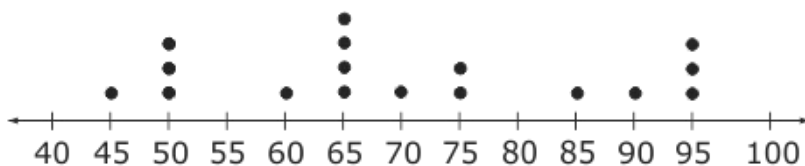
- A. 0.0
 - B. 2.2
 - C. 5.5
 - D. 11.0
74. How will the standard deviation of the data set below change if each number is increased by 3?
- {3, 8, 12, 17, 25}
- A. It will increase by 3.
 - B. It will remain the same.
 - C. It will decrease by 3.
 - D. It will be multiplied by 3.

75. Mr. Allen created the dot plots below using the test scores from chapter 1 and chapter 2.

Scores on Mr. Allen's Chapter 1 Test



Scores on Mr. Allen's Chapter 2 Test



Which statement is true?

- A. The mean of the chapter 1 test scores is greater than the mean of the chapter 2 test scores.
- B. The mean of the chapter 1 test scores is the same as the mean of chapter 2 test scores.
- C. The median of the chapter 1 test scores is less than the median of the chapter 2 test scores.
- D. The median of the chapter 1 test scores is the same as the median of the chapter 2 test scores.

76. There are 4 voting regions in the town of Pleasantville. The chart below shows the numbers of people registered as Democrats, Republicans, or Independents.

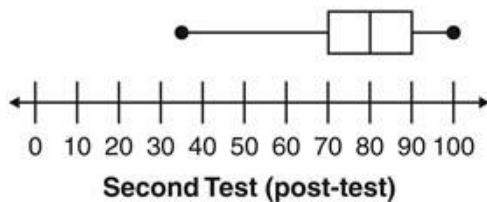
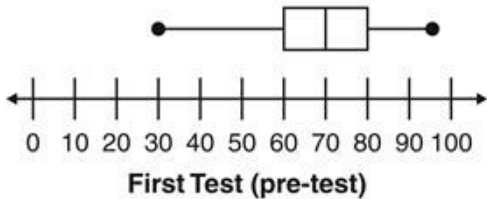
Pleasantville Voter Registrations

| Voting Region | Democrat | Republican | Independent |
|---------------|----------|------------|-------------|
| 1 | 420 | 316 | 270 |
| 2 | 336 | 338 | 322 |
| 3 | 214 | 369 | 451 |
| 4 | 195 | 188 | 175 |

Which statement is true?

- A. The median number of Democrats in a region is greater than the median number of Republicans in a region.
- B. The median number of Republicans in a region is greater than the median number of Democrats in a region.
- C. The median number of Republicans in a region is less than the median number of Independents in a region.
- D. The median number of Independents in a region is less than the median number of Democrats in a region.
77. The box-and-whisker plots below represent the scores for pre- and post-written tests for applicants obtaining their driver's licenses. A passing score is 70%.

Written Tests for Driver's License



Which of the following is best supported by the information in the graphs?

- A. Exactly 25% more applicants passed the post-test than the pre-test.
- B. Exactly 50% more applicants scored below the passing score on the pre-test than on the post-test.
- C. Of all the applicants that passed the pre-test, only 25% scored higher than a 90.
- D. Of all the applicants that passed the post-test, only 50% scored between a 70 and an 80.

78. Josh and three of his friends collect baseball cards. They keep track of how many new cards they buy each month on the table below.

Baseball Card Purchases

| Name | January | February | March | April | May |
|------|---------|----------|-------|-------|-----|
| Josh | 12 | 10 | 15 | 12 | 10 |
| Fred | 13 | 13 | 16 | 17 | 4 |
| Hank | 12 | 13 | 13 | 15 | 14 |
| Sam | 15 | 12 | 16 | 12 | 14 |

Which month has the greatest median?

- A. February
 - B. March
 - C. April
 - D. May
79. In an election, the median number of votes a candidate received in 5 towns was 250. Which statement must be true about this election?
- A. The candidate received 250 votes in at least 1 town.
 - B. The candidate received exactly 250 votes in at least two of the towns.
 - C. The total number of votes the candidate received in the election was 1250.
 - D. The total number of votes received by all the candidates in the election was 1250.
80. The two data sets below show the heights, in inches, of five students chosen at random from two different classes.

| | | | | | |
|----------------|----|----|----|----|----|
| Class A | 61 | 62 | 63 | 65 | 68 |
|----------------|----|----|----|----|----|

| | | | | | |
|----------------|----|----|----|----|----|
| Class B | 66 | 61 | 64 | 64 | 67 |
|----------------|----|----|----|----|----|

Based on these data, which statement **best** explains which class has taller students?

- A. Class A has taller students because it has a larger median.
- B. Class B has taller students because it has a larger median and mean.
- C. Class A has taller students because it has the student with the tallest height.
- D. Class B has taller students because it has no students with heights of fewer than 60 inches.

81. Amy kept track of the number of minutes each of her friends could stand on one foot. She assembled the data into the following set:

$$S = \{4, 5, 7, 10, 11, 13, 15, 20\}$$

Which set has the same inter-quartile range as S , but has a different median?

- A. The set consisting of each element of S plus 4:
 $\{8, 9, 11, 14, 15, 17, 19, 24\}$
- B. The set consisting of each element of S doubled:
 $\{8, 10, 14, 20, 22, 26, 30, 40\}$
- C. The set consisting of each element of S squared:
 $\{16, 25, 49, 100, 121, 169, 225, 400\}$
- D. The set consisting of the elements of S except the least and greatest elements:
 $\{5, 7, 10, 11, 13, 15\}$

82. Mrs. Bowen asked students in her class the average number of minutes each person spent reading each night. The results are recorded below.

| | | | | | | | | | | |
|--------------|----|----|----|----|----|----|----|----|----|----|
| Girls | 43 | 27 | 20 | 28 | 32 | 25 | 35 | 22 | 30 | 42 |
| Boys | 35 | 20 | 21 | 25 | 26 | 10 | 15 | 12 | 15 | 45 |

What is the **approximate** difference between the standard deviation of boys' and girls' reading times?

- A. 3
- B. 8
- C. 9
- D. 11

83. Ana is making a survey of the typical amount paid in property taxes for the houses in different neighborhoods. The property tax is based on the listed price of the house. The tables below show the prices of eight houses on Amber Street and Pine Street.

| | | | | | | | | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
| Prices of Houses on Amber Street (in dollars) | 204,500 | 178,400 | 219,500 | 162,500 | 204,500 | 189,500 | 230,600 | 246,500 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|

| | | | | | | | | |
|---|---------|---------|---------|---------|---------|---------|---------|---------|
| Prices of Houses on Pine Street (in dollars) | 150,500 | 179,900 | 185,000 | 205,495 | 225,500 | 230,000 | 239,000 | 795,000 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|

Which statistical measure would be best for Ana to use in comparing the typical amount paid in property taxes for the houses on these two streets?

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

84. The list below shows the number of seconds each of 15 dogs took to complete an obstacle course.

52, 51, 57, 63, 56, 50, 57, 59, 43, 59, 52, 58, 57, 45, 51

What is the mode of the numbers listed?

- A. 59 seconds
- B. 57 seconds
- C. 56 seconds
- D. 54 seconds

85. The current age for each member of the Garza family is shown below:

Jim is 49 years old.

Gianneta is 42 years old.

Elizabeth is 22 years old.

Danielle is 18 years old.

Kurt is 15 years old.

Tyler is 9 years old.

Franco is 5 years old.

Pilar is 1 year old.

Which of the following statements accurately compares the ages of the Garza family now, to their ages two years ago? (Two years ago, Pilar was not yet part of the Garza family.)

- A. The median age is lower now than it was two years ago.
- B. The interquartile range now is less than it was 2 years ago.
- C. The interquartile range now is greater than it was two years ago.
- D. The median age now is the same as the median age two years ago.

86. Which statement **best** describes the difference between data set 1 and data set 2 shown below?

Data set 1: {47, 36, 55, 48, 39, 43, 41, 45, 47, 36, 35, 58, 52, 33, 30}

Data set 2: {42, 44, 30, 60, 36, 56, 72, 38, 22, 30, 67, 62, 51, 25, 40}

- A. The median values are very similar, but the values in data set 2 are much more spread out since the interquartile range is larger.
- B. The median values are very similar, but the values in data set 1 are much more spread out since the interquartile range is smaller.
- C. The median value for data set 1 is larger, but the interquartile range is smaller, so the values in data set 1 are all larger than those in data set 2.
- D. The median value for data set 2 is larger, but the interquartile range is smaller, so the values in data set 2 are all smaller than those in data set 1.

87. The table below shows the high temperature each day for four weeks during the month of July.

| | | | | | | | |
|---------------|----|----|----|----|----|----|----|
| Week 1 | 88 | 93 | 96 | 95 | 89 | 76 | 98 |
| Week 2 | 85 | 85 | 92 | 94 | 81 | 86 | 88 |
| Week 3 | 92 | 91 | 93 | 84 | 85 | 80 | 80 |
| Week 4 | 88 | 87 | 90 | 89 | 88 | 85 | 89 |

Which week had the lowest mean temperature?

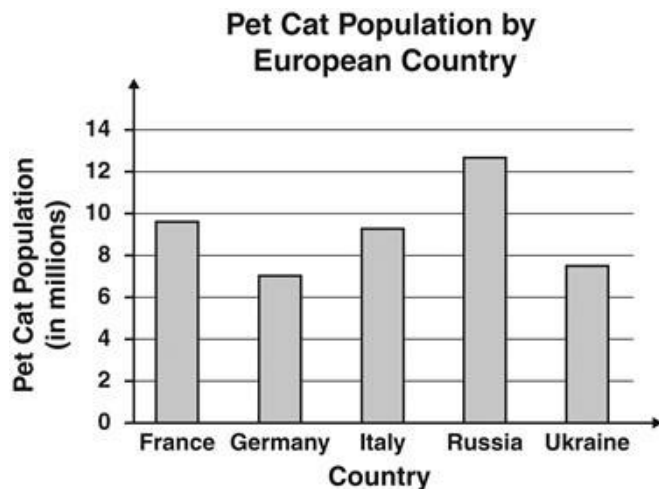
- A. Week 1
- B. Week 2
- C. Week 3
- D. Week 4

88. What is the mean of the data?

186, 181, 176, 149, 184, 190, 158, 139, 175, 111

- A. 183.2
- B. 175.5
- C. 168.5
- D. 164.9

89. Estimated pet cat populations for several European countries in 2002 are shown below.



If each cat population doubles by 2010, which value will be closest to the average pet cat population for these countries in 2010?

- A. 9 million
- B. 12 million
- C. 15 million
- D. 18 million

90. Two data sets are shown below.

Set 1: 54, 68, 68, 70, 73, 79, 84, 90, 96, 100

Set 2: 66, 68, 68, 70, 72, 80, 85, 98, 99, 100

Which statement is true about the data sets?

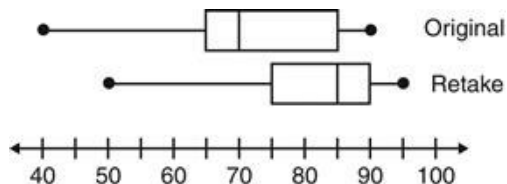
- A. The median of Set 1 is greater than the median of Set 2.
- B. The median of Set 1 is less than the median of Set 2.
- C. The mean of Set 1 is greater than the mean of Set 2.
- D. The mean of Set 1 is less than the mean of Set 2.

91. What is the mean (average) of the values shown below?

a, a, b, b, b, c

- A. $\frac{a+b+c}{3}$
- B. $\frac{2a+3b+c}{3}$
- C. $\frac{2a+3b+c}{6}$
- D. $\frac{a^2+b^3+c}{6}$

92. The two box-and-whisker plots represent the test scores in Mr. Miller's class. The original test scores are represented in the top plot, and the bottom plot represents the retake scores.



Based on the two plots, which statement is not correct?

- A. The median score on the retake test appears to be about 15 points higher than on the original test.
- B. There were 25% of the students who scored below a 75 on the retake test.
- C. On average, the students earned higher scores on the retake test.
- D. The range for both sets of scores is the same.

93. The data shows the test scores for two different instructors.

| Ms. Johnson's Class | Ms. Brown's Class |
|---------------------------------------|---|
| 60, 60, 80, 84, 75, 70, 93, 60, 60 | 90, 85, 55, 60, 85, 70, 90, 60, 85, 92, 79, 73, 65 |

Which statement is true?

- A. Ms. Brown's class had a smaller mean than Ms. Johnson's class.
- B. Ms. Brown's class had a larger mean than Ms. Johnson's class.
- C. Ms. Brown's class and Ms. Johnson's class had the same mean.
- D. Ms. Brown's class had a smaller median than Ms. Johnson's class.

94. The two sets of data in the tables show the speeds at which different wild animals can run.

Table One of Wild Animals' Running Speed

| Animal | Speed (mph) |
|---------------|--------------------|
| Cheetah | 70 |
| Elephant | 25 |
| Lion | 50 |
| Giraffe | 32 |
| Zebra | 40 |
| Moose | 25 |

Table Two of Wild Animals' Running Speed

| Animal | Speed (mph) |
|---------------|--------------------|
| Elk | 45 |
| Grizzly Bear | 30 |
| Coyote | 43 |
| Mule Deer | 35 |
| Wild Turkey | 15 |
| Gray Fox | 42 |

What is the difference between the lower quartile values for speeds in the two tables?

- A. 5 miles per hour
- B. 7 miles per hour
- C. 10 miles per hour
- D. 25 miles per hour