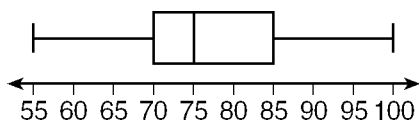


Name: \_\_\_\_\_  
 CC Algebra

### Statistics Test Review

Questions 1 and 2 refer to the following:

The accompanying box-and-whisker plot represents the scores earned on a science test.



1) According to the diagram shown, what is the median score?

- A) 75                                      C) 85  
 B) 77                                      D) 70

2) According to the diagram shown, what score represents the first quartile?

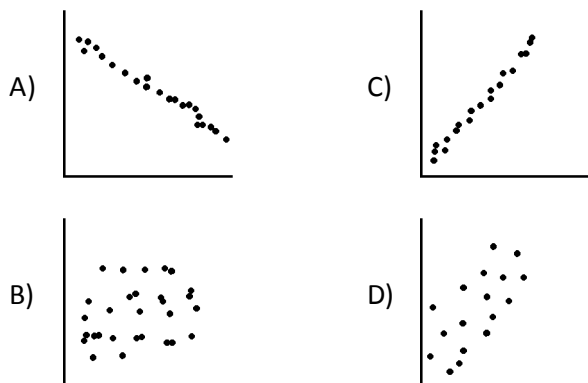
- A) 100                                      C) 55  
 B) 75                                      D) 70

3) What is the range of the following data?

47, 53, 38, 92, 101, 66

- A) 19                                      C) 63  
 B) 66                                      D) 54

4) Which scatter plot represents a strong negative correlation?



5) Which of the following statements shows a relationship that is correlated but *not* causal?

- A) The increase of warm, sunny days and the number of ice cream vendors visible.  
 B) The number of hours worked and how much money is made.  
 C) The number of lights left on each day and the amount of the electric bill.  
 D) The amount of rainfall received and level of water in the lake.

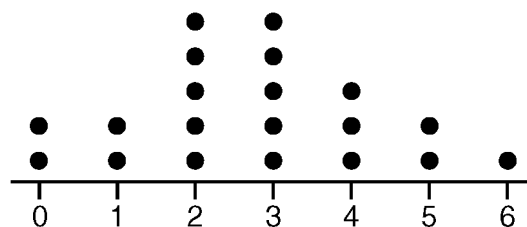
6) The table below shows 6 students' overall averages and their averages in their math class.

|                                |    |    |    |    |    |    |
|--------------------------------|----|----|----|----|----|----|
| <b>Overall Student Average</b> | 92 | 98 | 84 | 80 | 75 | 82 |
| <b>Math Class Average</b>      | 91 | 95 | 85 | 85 | 75 | 78 |

If a linear model is applied to these data, which one of the following statements *best* describes the correlation coefficient?

- A) It is close to -1.  
 B) It is close to 0.5.  
 C) It is close to 0.  
 D) It is close to 1.

7) The dot plot shown below represents the number of pets owned by students in a class.

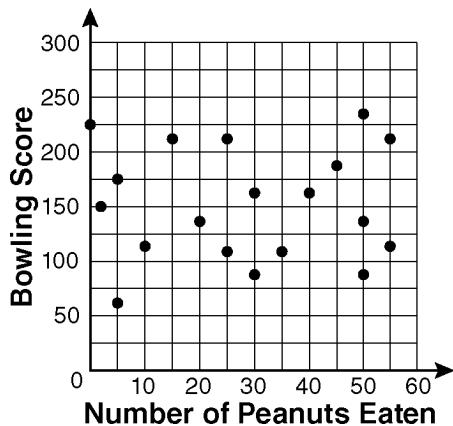


Which one of the following statements about the data is *not* true?

- A) The interquartile range is 2.  
 B) The mean is 3.  
 C) The median is 3.  
 D) The data contain no outliers.



- 13) The scatter plot below represents the relationship between the number of peanuts a student eats and the student's bowling score.



Which conclusion about the scatter plot is valid?

- A) Students who eat more peanuts have higher bowling scores.  
 B) No bowlers eat peanuts.  
 C) Students who eat more peanuts have lower bowling scores.  
 D) There is almost no relationship between eating peanuts and bowling score.

- 14) Which one of the following would most likely have a positive linear correlation coefficient?

- A) length of a driveway compared to number of cars owned  
 B) distance driven in a car compared to the hours spent driving  
 C) temperature of a refrigerator compared to the number of items inside of it  
 D) amount of money spent on baby food as a child ages

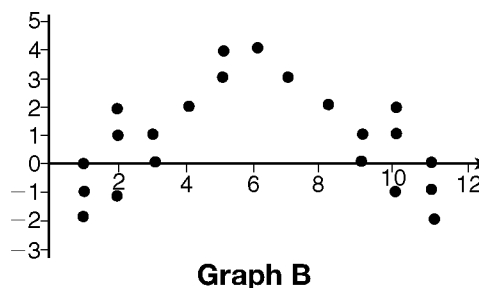
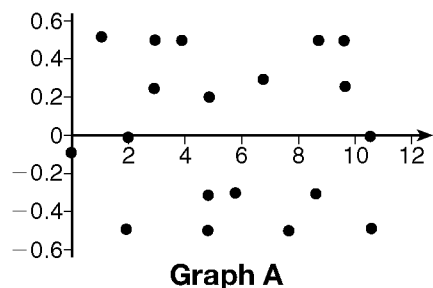
- 15) Mayken collected data about the size of the honors classes in her school building. This set of data is shown in the accompanying table.

| Class Size | Frequency |
|------------|-----------|
| 8          | 1         |
| 10         | 3         |
| 14         | 2         |

Which statement about the range of this sample is true?

- A) range < standard deviation  
 B) range > mean  
 C) range = mean  
 D) range < mean

- 16) The residual plots from two different sets of bivariate data are graphed below.



Explain, using evidence from graph A and graph B, which graph indicates that the model for the data is a good fit.

- 17) Construct a box-and-whisker graph using the following data:

87, 94, 82, 78, 95, 91, 87, 83, 101, 83, 82, 77, 80, 102, 75

- 18) Beth's scores on the six Earth Science tests she took this semester are 100, 95, 55, 85, 75, and 100. For this population, how many scores are within one standard deviation of the mean? [*Use a graphing calculator to justify your answers.*]

**Show your work.**

**Answer:** \_\_\_\_\_ scores

- 19) James uses the data he collected in a science experiment to calculate a line of best fit. He determines the equation of the line to be  $y = 7x + 2.25$ . He found that when  $x = 6$ , the actual value of  $y$  is 50.

**Part A**

Use this equation to calculate the predicted value of  $y$  when  $x = 6$ .

**Show your work.**

**Answer:** \_\_\_\_\_

**Part B**

Calculate the residual for  $x = 6$  and  $y = 50$ .

**Show your work.**

**Answer:** \_\_\_\_\_

- 20) Jean invested \$380 in stocks. Over the next 5 years, the value of her investment grew, as shown in the accompanying table.

| Years Since Investment ( $x$ ) | Value of Stock, in Dollars ( $y$ ) |
|--------------------------------|------------------------------------|
| 0                              | 380                                |
| 1                              | 395                                |
| 2                              | 411                                |
| 3                              | 427                                |
| 4                              | 445                                |
| 5                              | 462                                |

**Part A**

Write the exponential regression equation for this set of data, rounding all values to two decimal places.

**Answer:** \_\_\_\_\_

**Part B**

Using the equation written in Part A, find the value of her stock, to the nearest dollar, 10 years after her initial purchase.

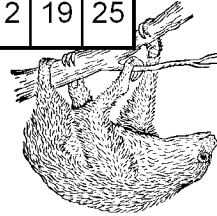
**Show your work.**

**Answer:** \$ \_\_\_\_\_

21) **Part A**

Determine a line of best fit for the distance,  $y$  (in feet), that a three-toed sloth travels after  $x$  minutes. [Round all coefficients to the nearest tenth.]

|                           |   |   |    |    |    |
|---------------------------|---|---|----|----|----|
| Time ( $x$ )              | 0 | 1 | 2  | 3  | 4  |
| Distance Traveled ( $y$ ) | 0 | 7 | 12 | 19 | 25 |



**Answer:** \_\_\_\_\_

**Part B**

Use your line of best fit from Part A to predict, to the nearest tenth of a foot, how many feet the sloth will have moved after  $3\frac{1}{2}$  minutes. **Show your work.**

**Answer:** \_\_\_\_\_ ft

**Part C**

Use your line of best fit from Part A to determine how many minutes (to the nearest tenth) it will take for the sloth to travel 37 feet. **Show your work.**

**Answer:** \_\_\_\_\_ min

**Part D**

Calculate the residual for a time of 2 minutes and a distance of 12 feet. **Show your work.**

**Answer:** \_\_\_\_\_ ft

- 22) In a high school survey of 180 boys and 180 girls, 146 boys were right-handed and only 22 girls were left-handed.

Complete the two-way frequency table for this data and answer each question that follows:

| <b>Handedness of Students</b> |                     |                    |              |
|-------------------------------|---------------------|--------------------|--------------|
|                               | <b>Right-handed</b> | <b>Left-handed</b> | <b>Total</b> |
| <b>Girls</b>                  |                     | 22                 | 180          |
| <b>Boys</b>                   | 146                 |                    | 180          |
| <b>Total</b>                  |                     |                    |              |

**Part A**

What is the joint frequency of left-handed boys?

**Answer:** \_\_\_\_\_

**Part B**

What is the joint frequency of right-handed girls?

**Answer:** \_\_\_\_\_

**Part C**

What is the marginal frequency of left-handed students?

**Answer:** \_\_\_\_\_

**Part D**

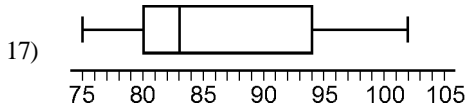
What is the marginal frequency of right-handed students?

**Answer:** \_\_\_\_\_

- 1) A    2) D    3) C    4) A    5) A  
 6) D    7) B    8) B    9) D    10) C  
 11) A    12) B    13) D    14) B    15) D

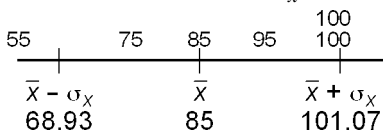
16) Graph A

SAMPLE EXPLANATION: Graph A indicates that the model for the data is a good fit because the points are equally spread above and below the x-axis.



18) 5 scores

WORK SHOWN:  $\bar{x} = 85, \sigma_x = 16.0728,$



19) Part A: 44.25

WORK SHOWN:  $y = 7(6) + 2.25 = 44.25;$

Part B: 5.75

WORK SHOWN: Residual =  $y_{\text{Actual}} - y_{\text{Predicted}},$  Residual =  $50 - 44.25 = 5.75$

20) Part A:  $y = 379.92(1.04)^x;$

Part B: \$562

WORK SHOWN:  $y = 379.92(1.04)^{10} = \$562$

21) Part A:  $y = 6.2x + 0.2;$

Part B: 21.9 ft

WORK SHOWN:  $y = 6.2(3.5) + 0.2 = 21.9;$

Part C: 5.9 min;

WORK SHOWN:  $37 = 6.2x + 0.2, 6.2x = 36.8, x = \frac{36.8}{6.2} = 5.935483871 \approx 5.9;$

Part D: -0.6 ft

WORK SHOWN: Residual =  $y_{\text{Actual}} - y_{\text{Predicted}},$  Residual =  $12 - 12.6 = -0.6$

**Handedness of Students**

|       | Right-handed | Left-handed | Total |
|-------|--------------|-------------|-------|
| Girls | 158          | 22          | 180   |
| Boys  | 146          | 34          | 180   |
| Total | 304          | 56          | 360   |

Part A: 34; Part B: 158; Part C: 56; Part D: 304