



Algebra I, Unit 10: Statistics Study Guide

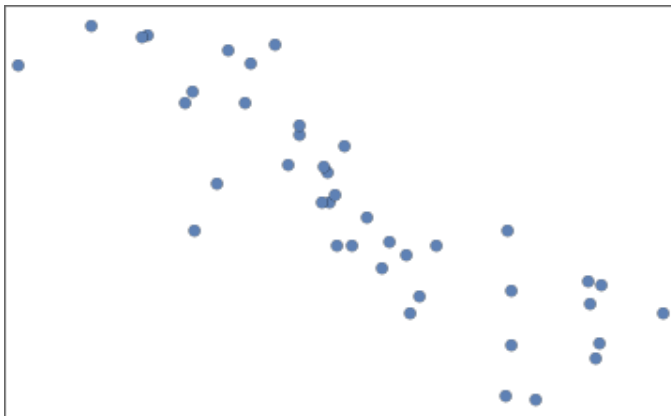
1. The following data were collected when a group of cats were weighed and the lengths of their tails were measured.

| Weight (lbs) | Length of Tail (in) |
|--------------|---------------------|
| 8.0 | 10.4 |
| 6.3 | 9.8 |
| 7.5 | 10.3 |
| 6.1 | 8.2 |
| 8.7 | 9.7 |
| 11.2 | 12.5 |

Which statement about these data is true?

- A) The data are qualitative and bivariate.
- B) The data are quantitative and bivariate.
- C) The data are qualitative and univariate.
- D) The data are quantitative and univariate.

2. A set of bivariate data is plotted on the scatterplot given below. Which interpretation of the strength and direction of the correlation is correct?



- A) Strong, negative correlation
- B) Weak, negative correlation
- C) Moderate, positive correlation
- D) Weak, positive correlation



3. The following table of data represents the results of a survey at a local mall. Respondents were asked to identify the Power Rangers Team they liked the most.

| | | |
|--------------------|-----------------|--------------------|
| Jungle Fury | Mighty Morphin' | Turbo |
| Mighty Morphin' | Dino Thunder | Galaxy |
| Super Samurai | Mighty Morphin' | Mighty Morphin' |
| Mighty Morphin' | Zeo | Light Speed Rescue |
| Light Speed Rescue | Mystic | Jungle Fury |
| Jungle Fury | Jungle Fury | Mighty Morphin' |

Which statement about these data is true?

- A) The data are qualitative and bivariate.
- B) The data are quantitative and bivariate.
- C) The data are qualitative and univariate.
- D) The data are quantitative and univariate.

4. A random survey of middle school students about what sport they prefer to play produced the following results.

| | Basketball | Baseball/Softball | Tennis | Track |
|--------------|-------------------|--------------------------|---------------|--------------|
| Girls | 22 | 15 | 24 | 14 |
| Boys | 28 | 18 | 8 | 18 |

What is the probability that a middle school student will be a girl given that the middle school student prefers tennis?

- A) $\frac{8}{49}$
- B) $\frac{3}{4}$
- C) $\frac{8}{25}$
- D) $\frac{32}{147}$



5. The following table of data represents the results of a survey at a local mall. Respondents were asked to identify the Power Rangers Team they liked the most.

| | | |
|--------------------|-----------------|--------------------|
| Jungle Fury | Mighty Morphin' | Turbo |
| Mighty Morphin' | Dino Thunder | Galaxy |
| Super Samurai | Mighty Morphin' | Mighty Morphin' |
| Mighty Morphin' | Zeo | Light Speed Rescue |
| Light Speed Rescue | Mystic | Jungle Fury |
| Jungle Fury | Jungle Fury | Mighty Morphin' |

Which one-way frequency table below correctly displays the frequencies and marginal probabilities that each different Power Rangers team was chosen by a mallgoer?

A)

| | | |
|--------------------|---|-----|
| Mighty Morphin' | 1 | 1/9 |
| Jungle Fury | 1 | 1/9 |
| Light Speed Rescue | 1 | 1/9 |
| Super Samurai | 1 | 1/9 |
| Dino Thunder | 1 | 1/9 |
| Zeo | 1 | 1/9 |
| Mystic | 1 | 1/9 |
| Turbo | 1 | 1/9 |
| Galaxy | 1 | 1/9 |

B)

| | |
|--------------------|-----|
| Mighty Morphin' | 1/9 |
| Jungle Fury | 1/9 |
| Light Speed Rescue | 1/9 |
| Super Samurai | 1/9 |
| Dino Thunder | 1/9 |
| Zeo | 1/9 |
| Mystic | 1/9 |
| Turbo | 1/9 |
| Galaxy | 1/9 |



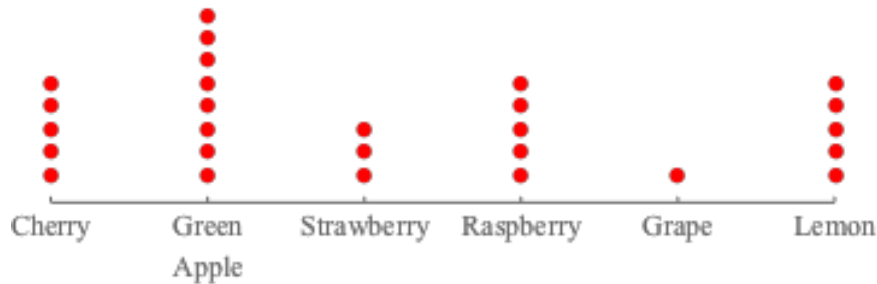
C)

| | | |
|--------------------|---|----------------|
| Mighty Morphin' | 6 | $\frac{1}{3}$ |
| Jungle Fury | 4 | $\frac{2}{9}$ |
| Light Speed Rescue | 2 | $\frac{1}{9}$ |
| Super Samurai | 1 | $\frac{1}{18}$ |
| Dino Thunder | 1 | $\frac{1}{18}$ |
| Zeo | 1 | $\frac{1}{18}$ |
| Mystic | 1 | $\frac{1}{18}$ |
| Turbo | 1 | $\frac{1}{18}$ |
| Galaxy | 1 | $\frac{1}{18}$ |

D)

| | |
|--------------------|---|
| Mighty Morphin' | 6 |
| Jungle Fury | 4 |
| Light Speed Rescue | 2 |
| Super Samurai | 1 |
| Dino Thunder | 1 |
| Zeo | 1 |
| Mystic | 1 |
| Turbo | 1 |
| Galaxy | 1 |

6. The dot plot below shows the number of each different kind of candy in one MiniMix bag from Sweet Treatz.



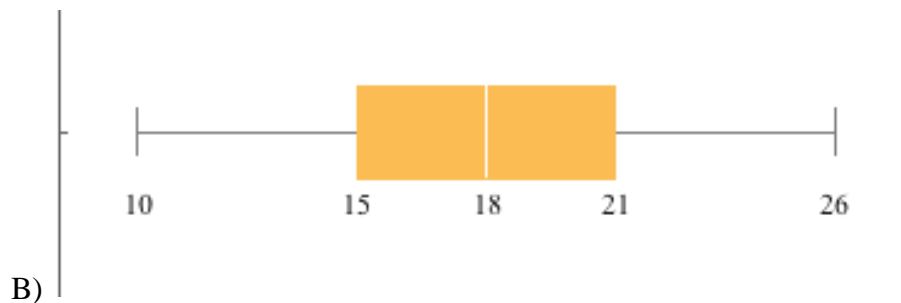
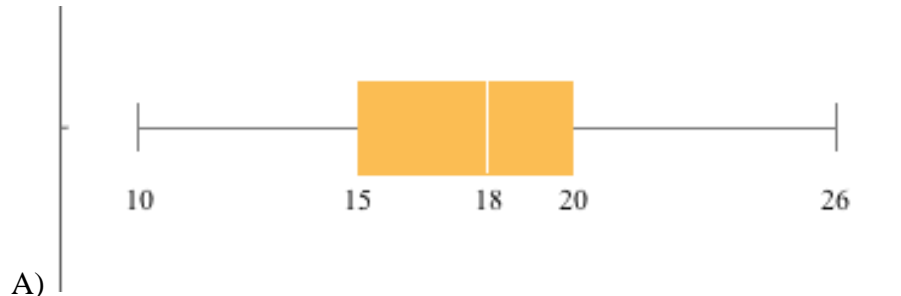
Which statement below represents something that cannot be determined from the information given?

- A) The average number of candies in the MiniMix bag
- B) The total number of candies in the MiniMix bag
- C) The largest number of one flavor of candy in the MiniMix bag
- D) The type of candy that shows up the least in the MiniMix bag.

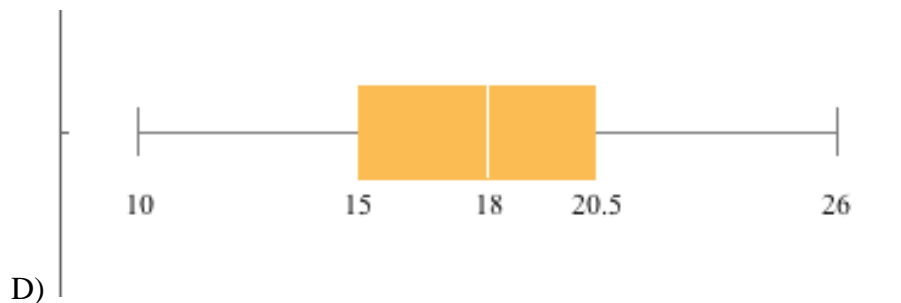


7. Which boxplot below correctly represents this data set?

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 10 | 10 | 12 | 14 | 15 | 15 | 15 | 16 | 16 | 18 |
| 18 | 19 | 20 | 20 | 20 | 21 | 22 | 25 | 25 | 26 |



C) None of these box plots are correct.

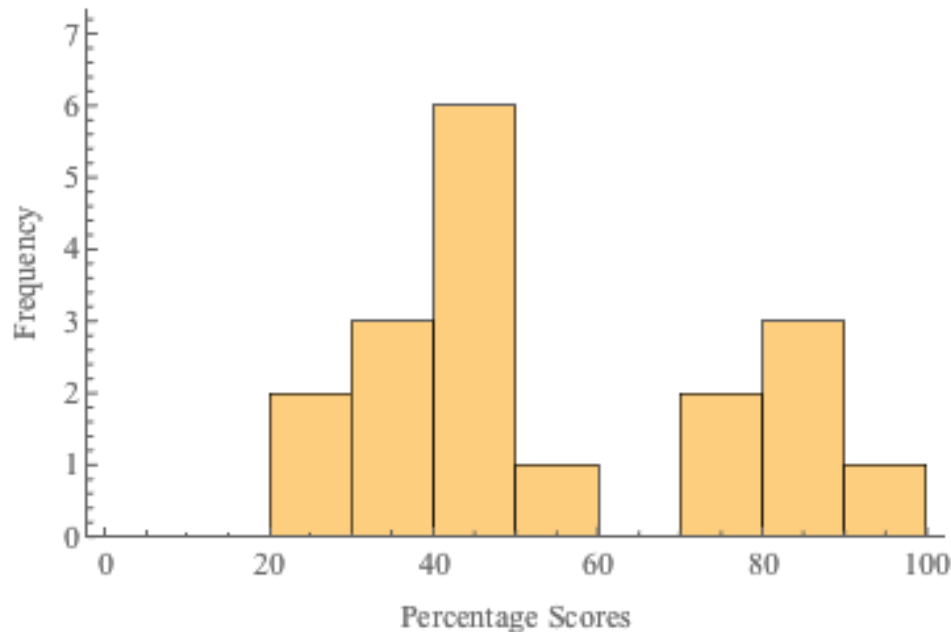


8. Using only one plot, which type would be most appropriate for exploring the relationship between the number of chili dogs we eat and how many times we can ride the Scrambler at Skeezy's Carnival before we throw up?

- A) A histogram
- B) A scatter plot
- C) A box plot
- D) A dot plot



9. The following histogram represents the percentage scores on a pretest for an upcoming unit test at James Woods Middle School.



Which of the following statements is true?

- A) The scores that occurred the most often were between 90 and 99.
- B) One person scored exactly a 50% on the test.
- C) Three people scored from 30 to 39.
- D) More people scored above 69 than scored below 60.

10. A data set has a distribution that has a single peak and is quite symmetric. We plan on adding a data point to the data set that is a clear outlier; it is much larger than all the other data points. Which statement below, about the effects of adding the outlier, is *incorrect*?

- A) The IQR will change a tiny bit.
- B) The mean will increase.
- C) The median may get a little bit larger.
- D) The standard deviation will stay close to the same value.



11. A scientific research article lists a correlation coefficient of $r = 0.921$ between the variables "days spent in inpatient therapy program" and "self-admitted perception of personal worth." What do we know about these two variables?

- A) In general, as the number of days spent in the inpatient therapy program increases, so too does the self-admitted perception of personal worth.
- B) In general, as the number of days spent in the inpatient therapy program decreases, so too does the self-admitted perception of personal worth.
- C) The number of days spent in the inpatient therapy program does not necessarily cause a change in the self-admitted perception of personal worth.
- D) All of these are correct statements about these variables.

12. The linear regression equation for the data set relating "hours spent studying per week" (x) and "overall GPA" (y) is $y = 0.231x + 2.03$. Which interpretation of the slope of the regression equation is correct?

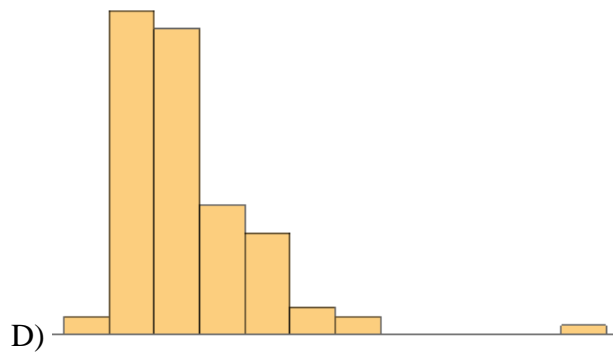
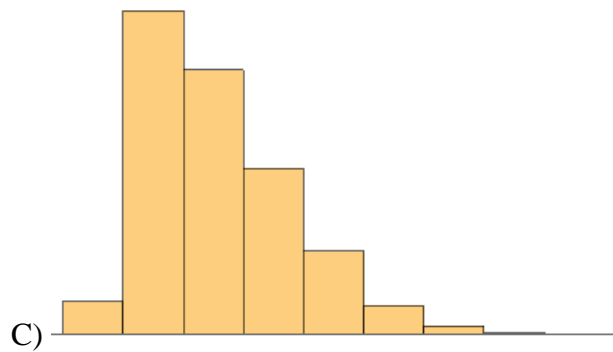
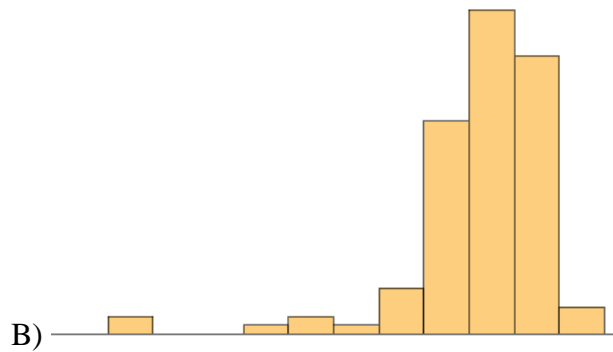
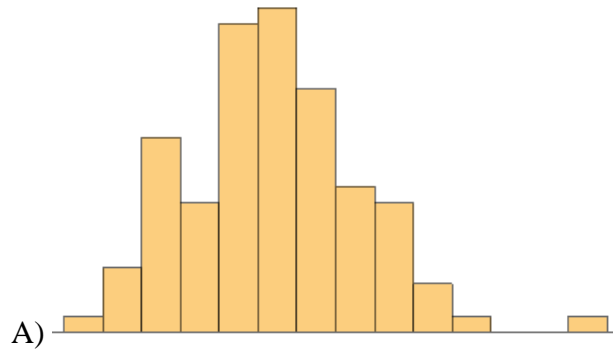
- A) For each hour students spend studying per week, their overall GPA increases by about 2.03.
- B) For each hour students spend studying per week, their overall GPA increases by about 0.231.
- C) For each increase of 1 in the GPA, the student likely spent about 0.231 more hours studying per week.
- D) For each increase of 1 in the GPA, the student likely spent about 2.03 more hours studying per week.

13. The linear regression equation for the data set relating "hours spent studying per week" (x) and "overall GPA" (y) is $y = 0.231x + 2.03$. Which interpretation of the y -intercept of the regression equation is correct?

- A) Someone who has a GPA of zero studies about 2.03 hours per week.
- B) Someone who studies zero hours per week can expect a GPA of about 0.231.
- C) Someone who has a GPA of zero studies about 0.231 hours per week.
- D) Someone who studies zero hours per week can expect a GPA of about 2.03.

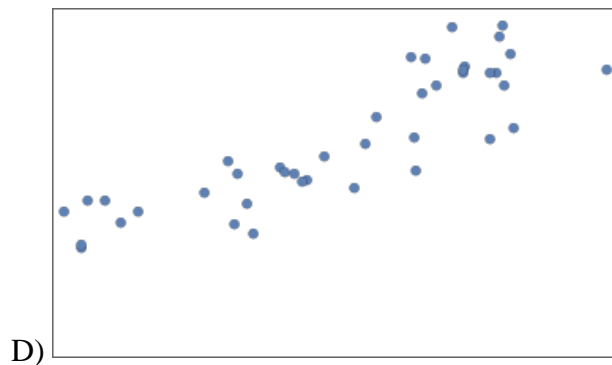
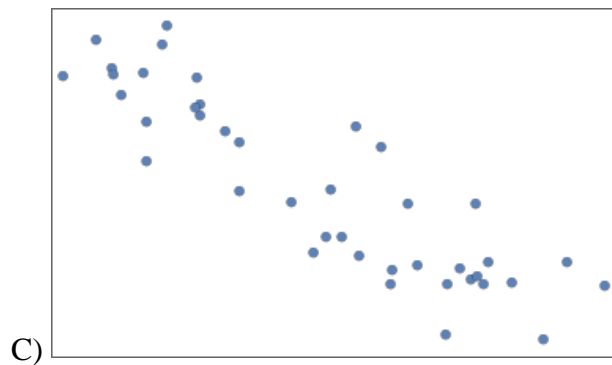
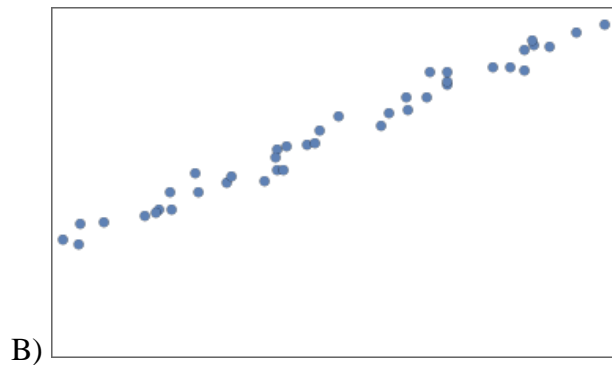
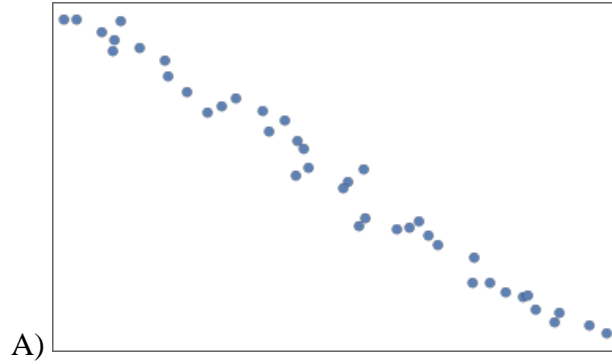


14. Which plot below has a skew to the right and an outlier in the direction of the skew?



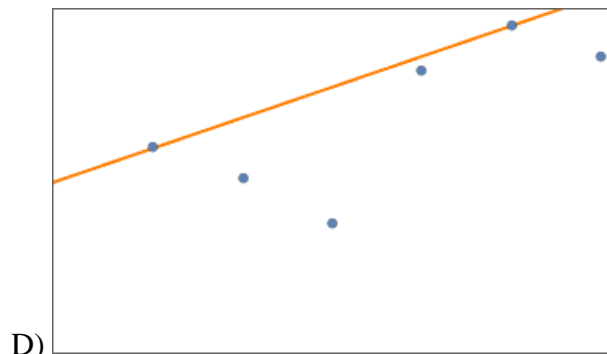
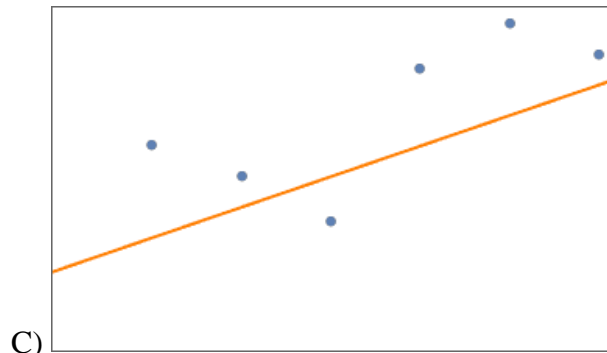
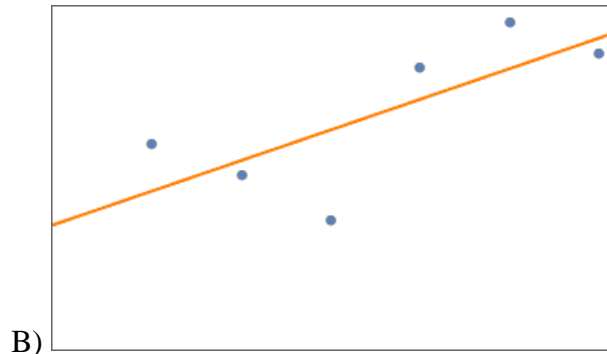
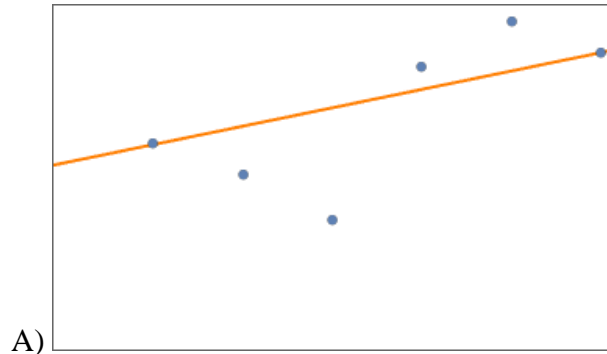


15. Which graph shows strong, negative correlation between the two variables?





16. The data in each answer choice below are the same. The only differences are the lines drawn on them. Which option has the most correct line of best fit?





17. The regression equation for the following data set is $y = x + 8$. What is the value of the residual for the point (8, 18) for this linear regression?

| | |
|----|----|
| 2 | 13 |
| 4 | 11 |
| 6 | 8 |
| 8 | 18 |
| 10 | 21 |
| 12 | 19 |

- A) -2
- B) 16
- C) 2
- D) -16