

Name: \_\_\_\_\_

Modeling Data | 8.1

**Ready, Set, Go!****Ready**

Topic: Measures of central tendency



Fill in the blanks for each statement about measures of central tendency.

1. The mean of a data set is the average of the data.
2. The median of a data set is the middle of the data.
3. The mode of a data set is the most frequent value(s) of the data.

Sam's test scores for the term were 60, 89, 83, 99, 95, and 60.

4. Suppose that Sam's teacher decided to base the term grade on the mean score.
  - a. What grade would Sam receive?  
**81**
  - b. Do you think this is a fair grade? Explain your reasoning.  
**Answers may vary. Students should refer to the mean being the average of the data and they may reference how the low grades of 60 pull the mean down.**
5. Suppose that Sam's teacher decided to base the term grade on his median score.
  - a. What grade would Sam receive?  
**86**
  - b. Do you think this is a fair grade? Explain your reasoning.  
**Answers may vary. Students should refer to the median being the middle score and therefore, the low grades do not skew the median.**
6. Suppose that Sam's teacher decided to base the term grade on the mode score.
  - a. What grade would Sam receive?  
**60**
  - b. Do you think this is a fair grade? Explain your reasoning.  
**Answers may vary. Students should refer to the mode being the most frequently occurring value in the data set. Since the mode is lower than the rest of the data, it is not a fair grade.**
7. Aiden's test scores for the same term were 30, 70, 90, 90, 91, and 99. Which measure of central tendency would Aiden want his teacher to base his grade on? Justify your thinking.  
**Aiden would want his teacher to base his grade on the mode (90) or the median (90) since they are both higher than the mean (78).**
8. Most teachers base grades on the mean. Do you think this is a fair way to assign grades? Why or why not?  
**Answers may vary.**

**Set**

Topic: Examining data distributions in a box-and-whisker plot

9. a. What percentage of data is represented by the box?

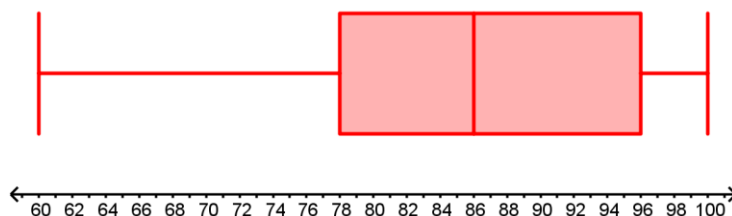
**50%**

- b. What percent of data is represented by each whisker?

**Each whisker is 25%**

10. Make a box-and-whisker plot for the following test scores.

60, 64, 68, 68, 72, 76, 76, 80, 80, 80, 84, 84, 84, 84, 88, 88, 88, 92, 92, 96, 96, 96, 96, 96, 96, 96, 100, 100



11. What does the graph tell you about student success on the test?

**Most students will score between 78 and 96 on the test.**

**Go**

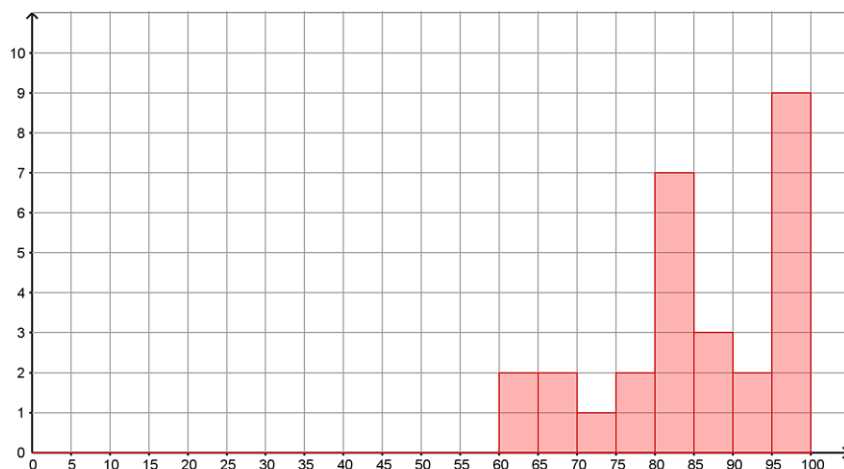
Topic: Drawing histograms.

Use the data from the SET section above to answer the following questions

12. Fill in the frequency table at the right. Use an interval of 5.

13. Make a histogram of the data using your intervals of 5.

Score	Frequency
60 - 64	<b>2</b>
65 - 69	<b>2</b>
70 - 74	<b>1</b>
75 - 79	<b>2</b>
80 - 84	<b>7</b>
85 - 89	<b>3</b>
90 - 94	<b>2</b>
95 - 100	<b>9</b>



Name: \_\_\_\_\_

## Modeling Data | 8.2

## Ready, Set, Go!

## Ready

Topic: Sequences in statistics



In problems 1–4 you are to select the best answer based on the given data. Below your chosen answer is a confidence scale. Circle the statement that best describes your confidence in the correctness of the answer you chose.

1. Data: 1, 2, 4, 8, 16, 32, ... The next number in the list will be:  
 a. larger than 32      b. positive      **c.** exactly 64      d. about 63.89

I am certain I am correct.      I am a little unsure.      I had no idea so I guessed.

What about the data made you feel the way you did about the answer you marked?

**Each value is doubled to obtain the next value in the sequence.**

---

2. Data: 47, -13, -8, 9, -23, 14, ... The next number in the list will be:  
**a.** positive      b. negative      c. less than 100      d. less than -100

I am certain I am correct.      I am a little unsure.      I had no idea so I guessed.

What about the data made you feel the way you did about the answer you marked?

**The pattern appears to subtract a number and then add 2 values. The next term would have a value added to obtain it.**

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3. Data:  $-10, \frac{3}{4}, 38, -10, \frac{1}{2}, -81, -10, \frac{1}{4}, 93, -10, \dots$  The next number in the list will be:  
 a. more than 93      b. negative      c. a fraction      **d.** a whole number

I am certain I am correct.      I am a little unsure.      I had no idea so I guessed.

What about the data made you feel the way you did about the answer you marked?

**A fraction always follows -10 and those fractions are each decreased by  $\frac{1}{4}$  so the next value should be 0.**

---

4. Data: 50, -43, 36, -29, 22, -15, ... The next number in the list will be:  
 a. odd      **b.** less than 9      c. two-digits      d. greater than -15

I am certain I am correct.      I am a little unsure.      I had no idea so I guessed.

What about the data made you feel the way you did about the answer you marked?

**14 is subtracted between each positive set of numbers. Therefore, the next value would be 8.**

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## Set

Topic: Drawing histograms.

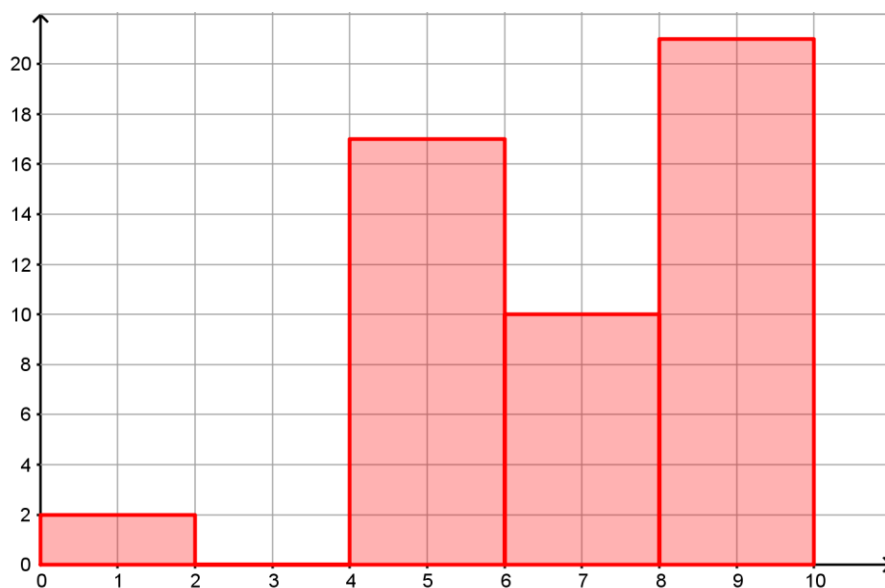
Mr. Austin gave a ten-point quiz to his 9th grade math classes. A total of 50 students took the quiz. Mr. Austin scored the quizzes and listed the scores alphabetically as follows.

1st Period Math	2nd Period Math	3rd Period Math
6, 4, 5, 7, 5, 9, 5, 4, 6, 6, 8, 5, 7, 5, 8, 1, 8, 7, 10, 9	4, 5, 8, 6, 8, 9, 5, 8, 5, 1, 5, 5, 7, 5, 7	9, 8, 10, 5, 9, 7, 8, 9, 8, 5, 8, 10, 8, 8, 5

5. Use all of the quiz data to fill in the frequency table to the right. Use an interval of 2.

Score	Frequency
0 – 1	2
2 – 3	0
4 – 5	17
6 – 7	10
8 – 9	18
10 – 11	3

6. Use your frequency table to make a histogram for the data



7. Describe the data distribution of the histogram you created. Include words such as: *mode*, *skewed*, *outlier*, *normal*, *symmetric*, *center*, and *spread*, if they apply.

**The data is skewed left. The mode of the data is 5. The data values of 1 appear to be outliers.**

**Go**

Reminder: Percent is a number per 100. Example:  $\frac{1}{4}$  is equivalent to  $\frac{25}{100}$  which is equivalent to 25%.

8. What percent of 97 is 11?

**11.3%**

9. What percent of 88 is 132?

**150%**

10. What percent of 84 is 9?

**10.7%**

11. What percent of 88.6 is 70?

**79%**

12. What is 270% of 60?

**162**

13. What is 84% of 25?

**21**

Name: \_\_\_\_\_

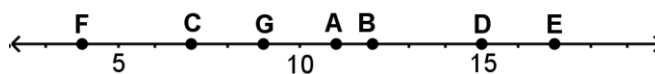
Modeling Data | 8.3

**Ready, Set, Go!****Ready**

Topic: Finding distances and averages



Use the number line below to answer the questions.



- How far away is each of the points on the number line from point A?  
**B: 1, C: 4, D: 4, E: 6, F: 7, G: 2**
- What is the total of all the distances from point A that you found in #1?  
**24**
- What is the average distance that any of the given points B through G are from point A?  
**4**
- Which point on the number line is located the average distance away from point A?  
**C & D**
- Label another location on the number line that is the average distance away from point A. Label it point X.
- How far away is each of the points on the number line from point D?  
**A: 4, B: 3, C: 8, E: 2, F: 11, G: 6**
- What is the total of all the distances from point D that you found in #6?  
**34**
- What is the average distance that any of the six other points are from point D?  
 **$5\frac{2}{3}$**
- Is there a point on the number line located the average distance away from point D?  
**No**
- Label another location on the number line that is the average distance away from point D? Label it point Y.  
**Point Y should be located at  $20\frac{2}{3}$  or  $9\frac{1}{3}$**

**Set**

Topic: Calculating standard deviation

Use the given data sets for questions 11-16. Each set has a mean of 20.

Set A	Set B	Set C	Set D
19, 19, 20, 20, 21, 21	10, 10, 20, 20, 30, 30	12, 13, 13, 27, 27, 28	9, 20, 20, 20, 20, 31

11. Based on your own intuition, arrange the four sets of data from the set that is “least spread out from the mean” to the set that is “most spread out from the mean.”

**Answers will vary**

12. a. Calculate the standard deviation of each set.

**Set A: 0.8165****Set B: 8.165****Set C: 7.3485****Set D: 6.3509**

- b. Use your answers from part a to arrange the four sets of data from the set with the smallest standard deviation to the set with the largest standard deviation.

**Set A, Set D, Set B, Set C**

13. Are the two arrangements from question 11 and 12a the same?

**Go**

Topic: Conducting a survey

14. Survey at least 10 people using the question your group created in today’s warm up. Use the space below to organize the data. Be sure to keep this page for future reference.

Name: \_\_\_\_\_

## Modeling Data | 8.4

## Ready, Set, Go!



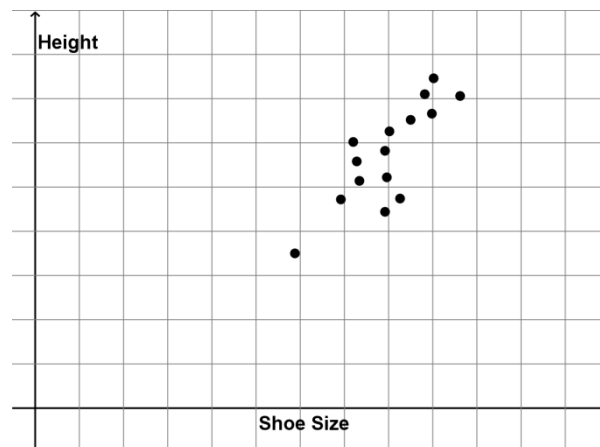
## Ready

Topic: Interpreting data from a scatterplot

1. The scatterplot compares shoe size and height in adult males. Based on the graph, do you think there is a relationship between a man's shoe size and his height?

Explain your answer.

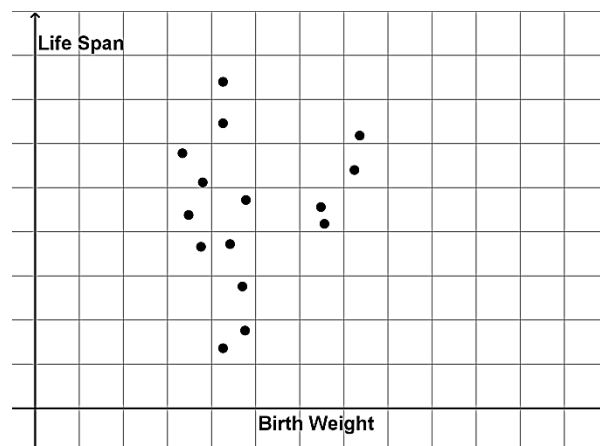
**The data appears to have a positive linear relationship because as the shoe size increases, the height of the adult males increases.**



2. The scatterplot compares birth weight to life span. Based on the graph, do you think birth weight is related to a person's life span?

Explain your answer.

**There doesn't seem to be a relationship because the data is very scattered.**





**Set**

Topic: Two-way frequency tables.

Here is the data from Mr. Austin's ten-point quiz. Students needed to score a 6 or better to pass the quiz.

1st Period Math	2nd Period Math	3rd Period Math
6, 4, 3, 7, 5, 9, 5, 4, 6, 6, 8, 5, 7, 3, 6, 2, 8, 7, 10, 9	3, 3, 8, 6, 6, 9, 5, 8, 5, 3, 5, 5, 7, 5, 7	9, 8, 10, 5, 9, 7, 8, 9, 8, 3, 8, 10, 8, 7, 5

1. Make a two-way frequency table showing how many students passed the quiz and how many failed in each class.

	1st Period	2nd Period	3rd Period	Total
Passed	12	7	12	31
Failed	8	8	3	19
Total	20	15	15	50

2. Use a colored pencil to lightly shade the cells containing the *joint frequency* numbers in the table. The unshaded numbers are the *marginal frequencies*. Use these terms to answer the following questions.  
**The highlighted values are the joint frequency numbers in the table.**
3. If Mr. Austin wanted to see how many students in all 3 classes combined passed the quiz, where would he look?  
**Mr. Austin would look at the marginal frequency on in the total column.**
4. If Mr. Austin wanted to write a ratio of the number of passing students compared to the number of failing students for each class, where would he find the numbers he would need to do this?  
**Mr. Austin would find these numbers in the joint frequencies under each class period's column.**

**Go**

5. Sophie surveyed all 6th grade students at Reagan Elementary School to find out which TV Network was their favorite. She thought that it would be important to know whether the respondent was a boy or a girl so she recorded her information this way.

<b>Animal Planet</b>	<b>Cartoon Network</b>	<b>Disney</b>	<b>Nickelodeon</b>
GGBBBBBGBB BGBBBGGBBB BBBBB	BBBBBBBBBG GGBBBGBGBG GGBGG	GGGGGGBBBB BBGBGBGGGB BBGGBGGGGB BBGGGGGB	BBBBGGGGGG GGGGGGBBGG GGGGGGGGGB BBBBGGGGGG GGGGGGGG

Sophie planned to use her data to answer the following questions:

- Are there more girls or boys in the 6th grade?  
**There are more girls**
  - Which network was the boys' favorite?  
**Animal Planet**
  - Was there a network that was favored by more than 50% of one gender?  
**No**
6. When she looked at her chart above, Sophie realized that the data wasn't telling her what she wanted to know. Her teacher suggested that her data would be easier to analyze if she could organize it into a two-way frequency table. Help Sophie out by putting the frequencies into the correct cells.

<i><b>Favorite TV Networks</b></i>	<i><b>Girls</b></i>	<i><b>Boys</b></i>	<i><b>Totals</b></i>
<b>Animal Planet</b>	<b>6</b>	<b>19</b>	<b>25</b>
<b>Cartoon Network</b>	<b>10</b>	<b>15</b>	<b>25</b>
<b>Disney</b>	<b>22</b>	<b>16</b>	<b>38</b>
<b>Nickelodeon</b>	<b>36</b>	<b>12</b>	<b>48</b>
<b>Totals</b>	<b>74</b>	<b>62</b>	<b>136</b>

Now that Sophie has her data organized, use the two-way frequency table to answer her 3 questions.

- Are there more girls or boys in the 6th grade?  
**Girls**
- Which network was the boys' favorite?  
**Animal Planet**
- Was there a network that was favored by more than 50% of one gender?  
**No**

Name: \_\_\_\_\_

## Modeling Data | 8.5



## Ready, Set, Go!

## Ready

Topic: Linear functions and relationships

Write the explicit linear function for the given information below.

1.  $(3, 7), (5, 13)$

$$f(x) = 3x - 2$$

2. Mike earns \$11.50 an hour

$$f(x) = 11.50x$$

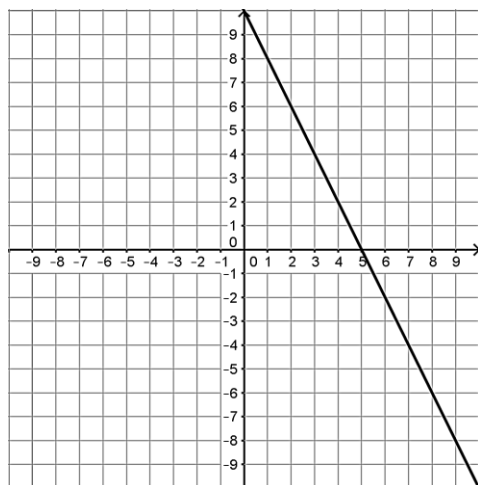
3.  $(-5, -2), (1, 10)$

$$f(x) = 2x + 8$$

4.  $(-2, 12), (6, 8)$

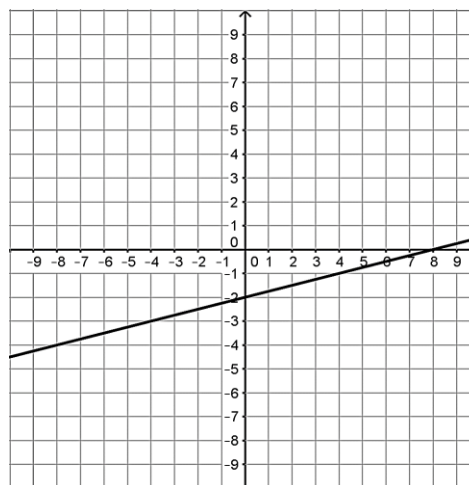
$$f(x) = -\frac{1}{2}x + 11$$

5.



$$f(x) = -2x + 10$$

6.



$$f(x) = \frac{1}{4}x - 2$$

**Set**

Topic: Relative frequency tables

For each two-way table below, create the indicated relative frequency table and also provide two observations with regard to the data.

7. This table represents survey results from a sample of students regarding mode of transportation to and from school.

	Walk	Bike	Car Pool	Bus	Total
Boys	37	47	27	122	233
Girls	38	22	53	79	192
Total	75	69	80	201	425

Create a table showing the *relative frequency of rows*. Then provide two observation statements.

	Walk	Bike	Car Pool	Bus	Total
Boys	16%	20%	12%	52%	100%
Girls	20%	11%	28%	41%	100%
Total	18%	16%	19%	47%	100%

Observations:

**Most girls and boys take the bus. Biking is the least likely method of transportation for girls. Carpools are the least likely method of transportation for boys.**

8. The two-way table contains survey data regarding family size and pet ownership.

	No Pets	Own one Pet	More than one pet	Total
Families of 4 or less	35	52	85	172
Families of 5 or more	15	18	10	43
Total	50	70	95	215

Create a table showing the *relative frequency of columns*. Then provide two observation statements.

	No Pets	Own one Pet	More than one pet	Total
Families of 4 or less	70%	74%	89%	80%
Families of 5 or more	30%	26%	11%	20%
Total	100%	100%	100%	100%

Observations:

**Most families of 4 or less have more than one pet. Most families with 5 or more own no pets.**

9. The two-way table below contains survey data about boys and girls shoes.

	<b>Athletic shoes</b>	<b>Boots</b>	<b>Dress Shoe</b>	<b>Total</b>
<b>Girls</b>	21	35	60	116
<b>Boys</b>	50	16	10	76
<b>Total</b>	71	51	70	192

Create a table showing the *relative frequency of the whole table*. Then provide two observation statements.

	<b>Athletic shoes</b>	<b>Boots</b>	<b>Dress Shoe</b>	<b>Total</b>
<b>Girls</b>	<b>11%</b>	<b>18%</b>	<b>31%</b>	<b>60%</b>
<b>Boys</b>	<b>26%</b>	<b>9%</b>	<b>5%</b>	<b>40%</b>
<b>Total</b>	<b>37%</b>	<b>27%</b>	<b>36%</b>	100%

Observations:

**Most girls wear dress shoes. Most boys wear athletic shoes.**

## Go

Topic: One variable statistical measures and comparisons

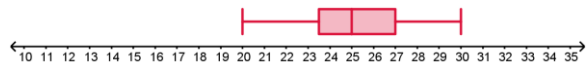
**The mean and standard deviation work as a team to help describe the center and spread for data that is symmetric about the mean. A box-and-whisker plot is a different way of describing the center and spread. For each set of data, use both methods to learn about the center and spread.**

10. {23, 24, 25, 20, 25, 29, 24, 25, 30}

Mean: **25**

Standard Deviation: **2.8284**

Min, Q1, Median, Q2, Max:  
**20, 23.5, 25, 27, 30**

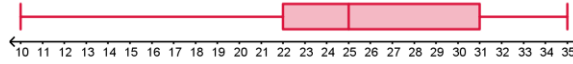


11. {20, 24, 10, 35, 25, 29, 24, 25, 33}

Mean: **25**

Standard Deviation: **6.9282**

Min, Q1, Median, Q2, Max:  
**10, 22, 25, 31, 35**



Name: \_\_\_\_\_

## Modeling Data | 8.6

Set, Go!



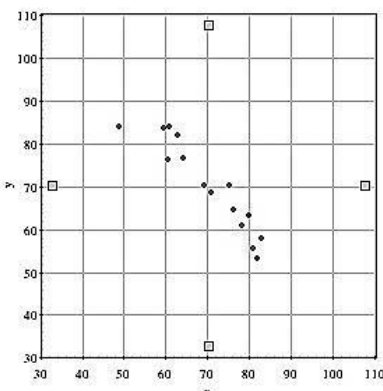
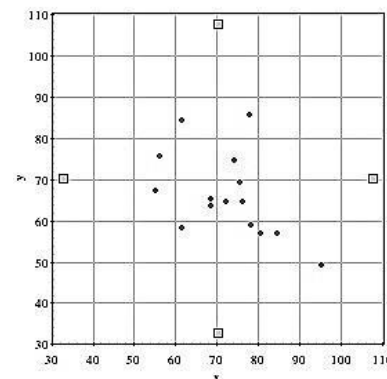
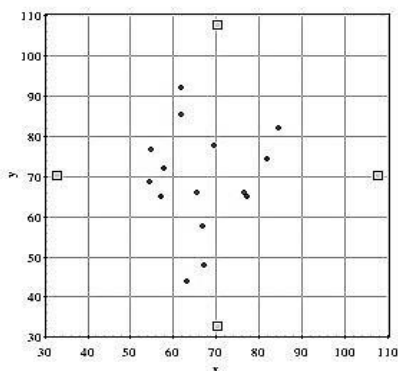
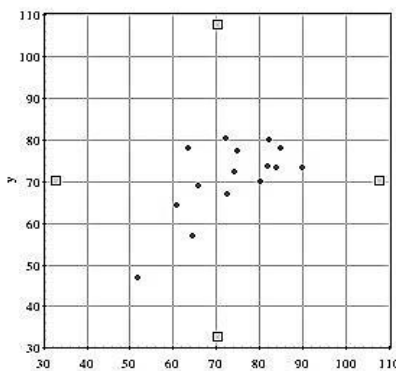
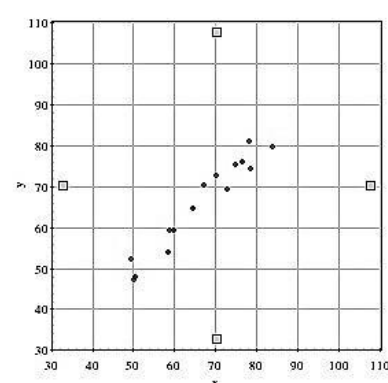
Set

Topic: Estimating the correlation coefficient

Match the scatterplot with its correlation coefficient.

Correlation Coefficients:

0.05  
0.97  
-0.94  
-0.51  
0.68

-0.94 1.-0.51 2.0.05 3.0.68 4.0.97 5.

Topic: Relative frequency table

6. Complete the following relative frequency of row table.

	Growth Mindset	Fixed Mindset	Total
GPA Above 3.0	28	12	40
GPA at or Below 3.0	9	58	67

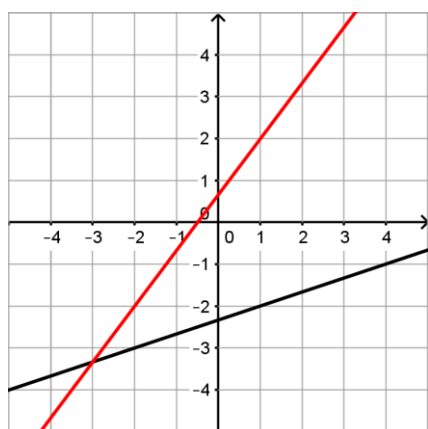
	Growth Mindset	Fixed Mindset	Total
GPA Above 3.0	70%	30%	100%
GPA at or Below 3.0	13.4%	86.6%	100%

**Go**

Topic: Visually comparing slopes of lines

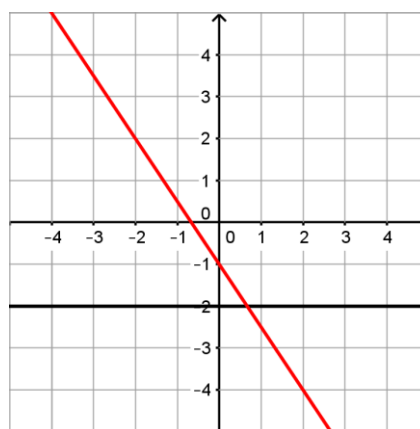
Follow the prompt to sketch the graph of a line on the same grid with the given characteristics.

7. A greater slope



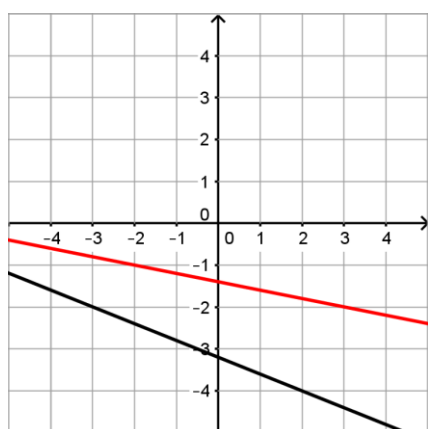
(sample answer)

8. A smaller slope



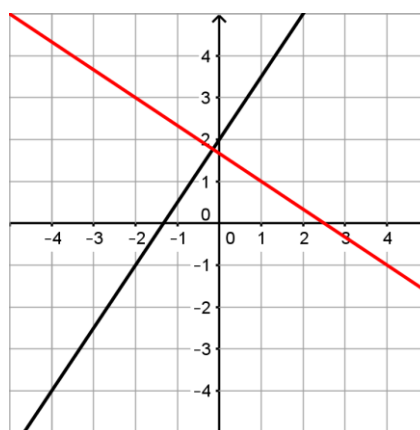
(sample answer)

9. A larger y-intercept and a slope whose absolute value is smaller



(sample answer)

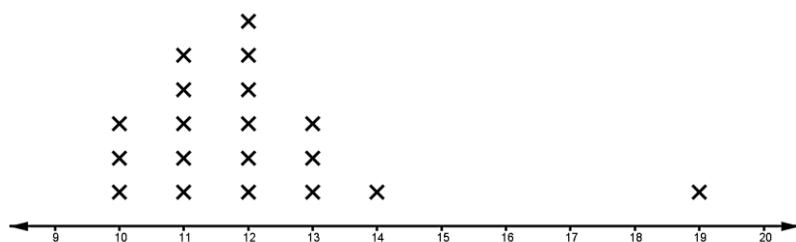
10. Slope is the negative reciprocal



(sample answer)

Topic: Describing data distributions

10. The line plot below shows the number of states students in Elisa's social studies class have visited.



- a. Choose the appropriate measures to describe the center and spread of the distribution. Justify your response based on the shape of the distribution.

**The distribution is not symmetric and there is an outlier, 19. The median and interquartile range are appropriate measures to use.**

- b. Write a few sentences describing the center and spread of the distribution using the appropriate measures.

**The median is 12 states. The lower quartile is 11. The upper quartile is 13. The interquartile range is  $13 - 11$ , or 2 states.**

**The data are centered around 12 states. The spread of the data around the center is about 2 states.**

11. Below are survival times (in days) of 13 guinea pigs that were injected with a bacterial infection in a medical study:

79    83    84    91    91    93    95    97    97    98    101    105    111

- a. Find the 5-number summary for this data set.

**Min: 79      Quartile 1: 87.5      Quartile 2: 95      Quartile 3: 99.5      Max: 111**

- b. Are there any outliers in the data set? Use the 1.5 IQR rule to check.

**Upper limit =  $Q3 + 1.5 \cdot IQR = 117.5$**

**Lower limit =  $Q1 - 1.5 \cdot IQR = 69.5$**

**No outliers**

- c. Which would be more appropriate description of center and spread for this data set: The mean and standard deviation or the 5-number summary? Why?

**The mean and standard deviation since the data is symmetric without outliers.**



12. We have a class of 30 students and the data below shows the height (in cm) distribution of those people. The data has already been sorted from lowest to highest.

132   151   151   152   156   156   157   160   161   162  
163   163   165   167   167   169   171   172   175   175  
177   177   178   183   186   189   189   189   197   206

- a. Find the 5-number summary for this data set.

**Min: 132      Quartile 1: 160      Quartile 2: 168      Quartile 3: 178      Max: 206**

- b. Find the mode for this data set.

**189**

- c. Are there any outliers in the data set above? Use the 1.5 IQR rule to check.

**Upper limit =  $Q3 + 1.5 \cdot IQR = 205$**

**Lower limit =  $Q1 - 1.5 \cdot IQR = 133$**

**206 and 132 are outliers**

13. Create three questions to ask your peers that will generate data that can be used in a two-way table.

1.

2.

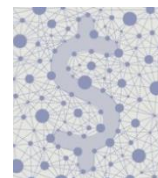
3.

Name: \_\_\_\_\_

Modeling Data | 8.7

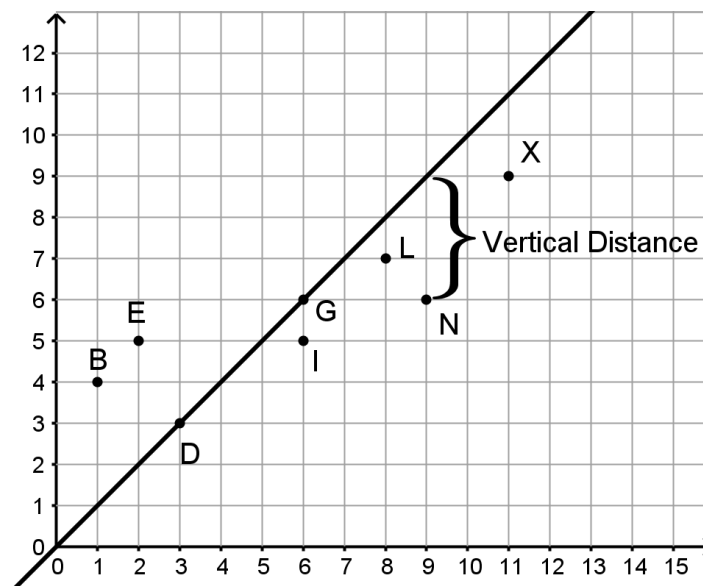
**Ready, Set!****Ready**

Topic: Finding distance and averages.



The graph below has several points and shows the line  $y = x$  use this graph to answer each question.

1. The vertical distance between point N and the line  $y = x$  is labeled on the graph. Find all of the vertical distances between the points and the line  $y = x$ .

B: **3**D: **0**E: **3**G: **0**I: **1**L: **1**N: **3**X: **2**

2. What is the sum of the distances between the points and the line  $y = x$ ?

**13**

3. What is the average vertical distance that any of the points are away from the line  $y = x$ ?

**1.625**

4. Is the line on the graph the line of best fit? Explain why or why not. If it is not the line of best fit, then draw a line that better fits the data.

**It is not the line of best fit because there are very few points on or right near the line.**

5. Estimate the correlation coefficient for this set of data points. If you have a way to calculate it exactly then do so.

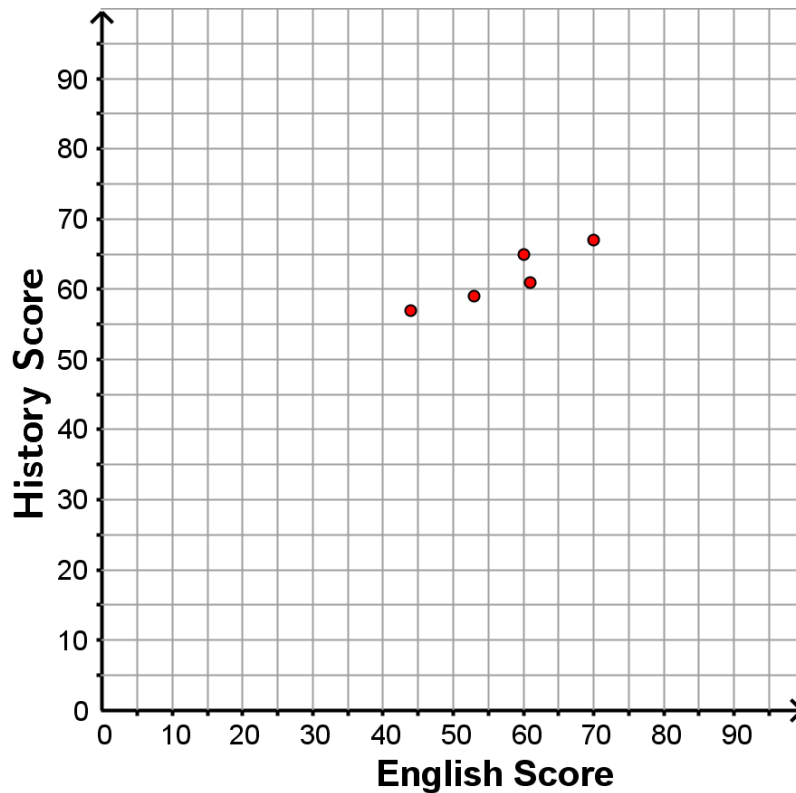
**0.8587**

**Set**

Topic: Scatterplots and line of best fit or trend lines.

English Score	History Score
60	65
53	59
44	57
61	61
70	67

6. Create a scatterplot for the data in the table on the provided grid.



7. Do the English and History scores have a positive or negative correlation?

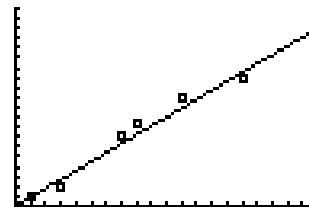
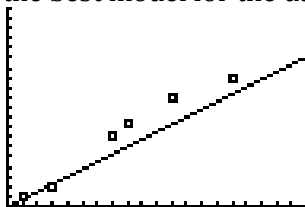
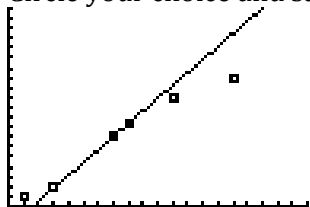
**Positive correlation**

8. Do English and History scores have a strong or weak correlation?

**Strong correlation**

9. Which of the graphs below shows the best model for the data displayed and will create the best predictions?

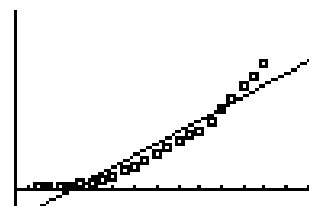
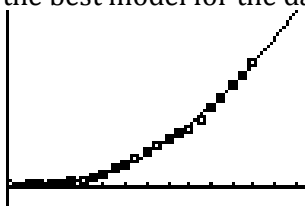
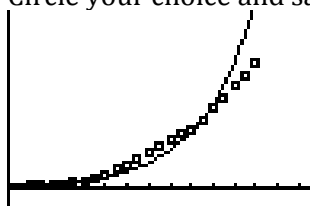
Circle your choice and say why it is the best model for the data.



**The graph on the right is the best model because most of the points are either on or near the line.**

10. Which of the graphs below shows the best model for the data displayed and will create the best predictions?

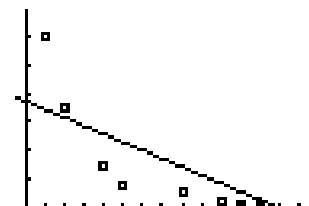
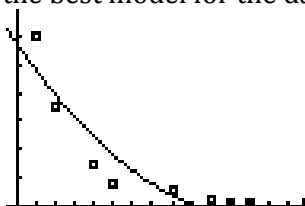
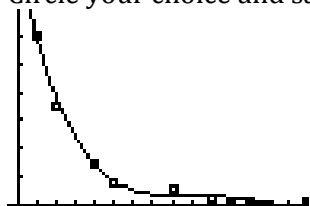
Circle your choice and say why it is the best model for the data.



**The middle graph is the best model because most of the data points are on the model.**

11. Which of the graphs below shows the best model for the data displayed and will create the best predictions?

Circle your choice and say why it is the best model for the data.



**The first graph is the best model because most of the data points are on the model.**

12. Using the question your group came up with in today's warm up, conduct a survey of your peers. Survey at least 10 people. Record your data in the space below – be sure to keep this page for future use.

Name: \_\_\_\_\_

Modeling Data

8.8

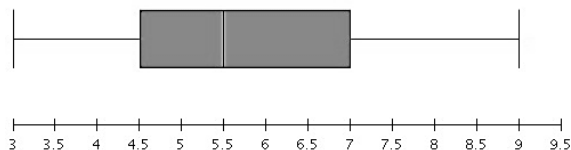
**Ready, Set!****Ready**

Topic: Describe the spread of the data.



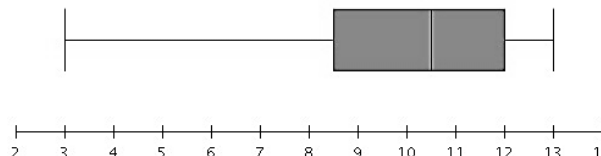
Given the box plots describe the spread of the data set. Provide specifics about the median, range, interquartile range, etc.

1.



**Median: 5.5, IQR: 2.5, Range: 6, Min: 3, Max: 9, Q1: 4.5, Q3: 7**

2.

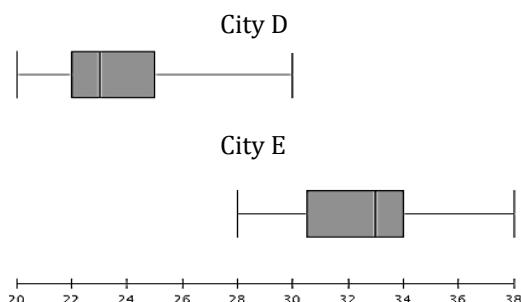


**Median: 10.5, IQR: 3.5, Range: 10, Min: 3, Max: 13, Q1: 8.5, Q3: 12**

3. If the box-and-whisker plots above represent the results of two different classes on the same assessment, which class did better? Why?

**The class in problem 2 did better because the median, max and "box" were higher than problem 1.**

4. The two box-and-whisker plots below show the low temperatures for two cities in the United States.



a. Which city would be considered the coldest City D or City E? Why?

**City D is coldest because the minimum, quartiles, median, and maximum are lower than City E.**

b. Do these cities ever experience the same temperature? How do you know?

**The cities have overlapping "whiskers" between 28 and 30 degrees.**

c. Is there any way to know the exact temperature for any given day from the box and whisker plots?

**No**

d. What advantage, if any, could a scatterplot of temperature data have over a box-and-whisker plot?

**A scatterplot would tell you the type of relationship in the data and would let you predict the temperatures during different parts of the year.**

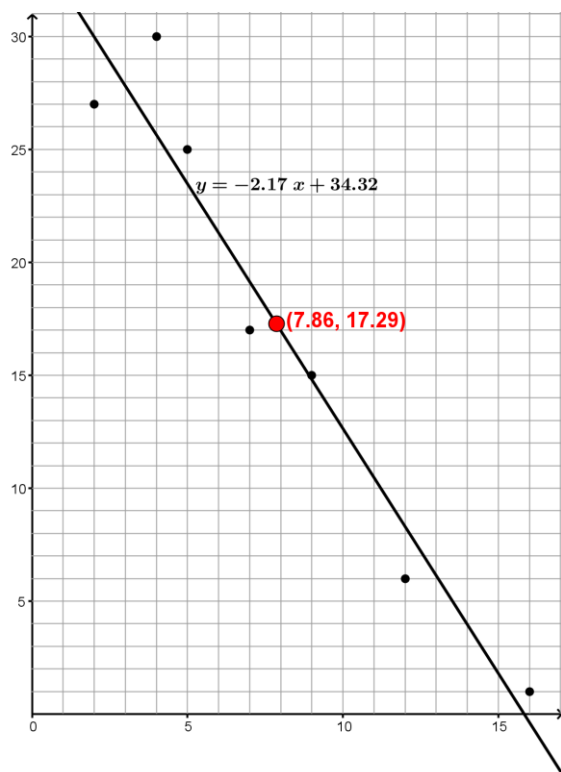
## Set

Topic: Residuals, residual plots and correlation coefficients.

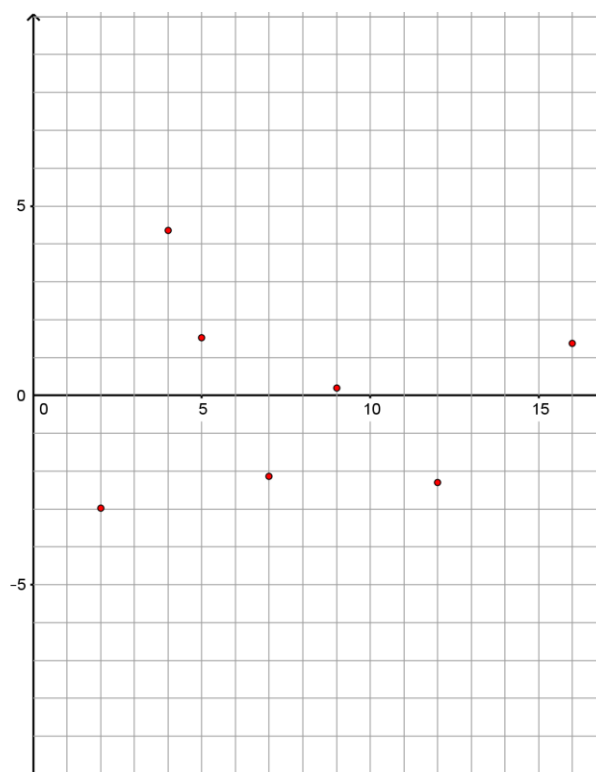
The data sheets below are scatterplots that have the regression line and the residuals indicated.

5. a. Mark on the graph where  $(\bar{x}, \bar{y})$  would be located.  
 b. Use this given plot to create a residual plot.  
 c. What would you predict the correlation coefficient to be? Why?  
**-0.85 because there is a strong negative correlation.**

Data Sheet 1

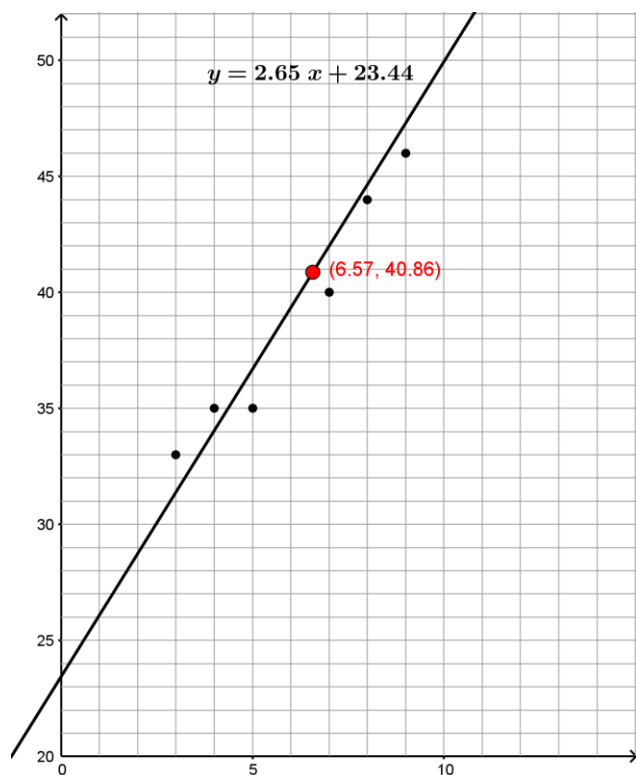


Residual Plot 1

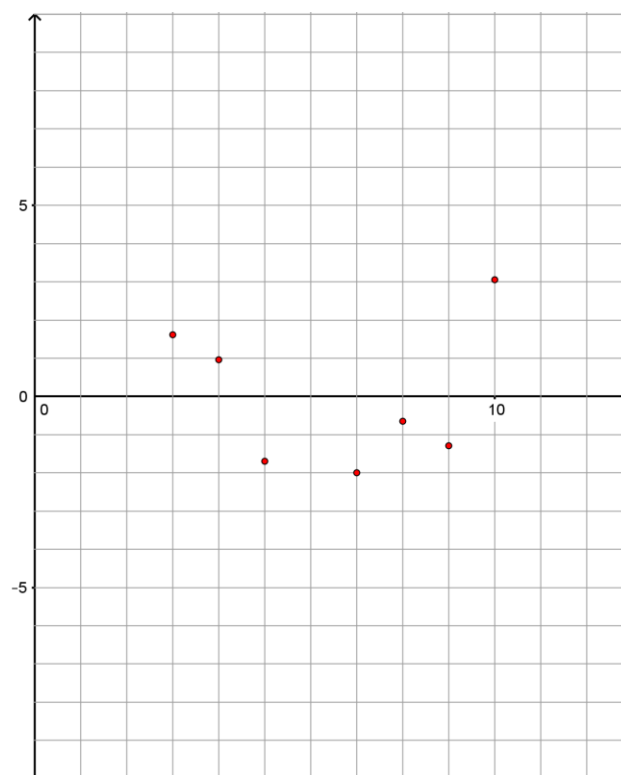


6. a. Mark on the graph where  $(\bar{x}, \bar{y})$  would be located.  
 b. Use this given plot to create a residual plot.  
 c. What would you predict the correlation coefficient to be? Why?  
**0.9 because the data has a strong positive correlation.**

Data Sheet 2

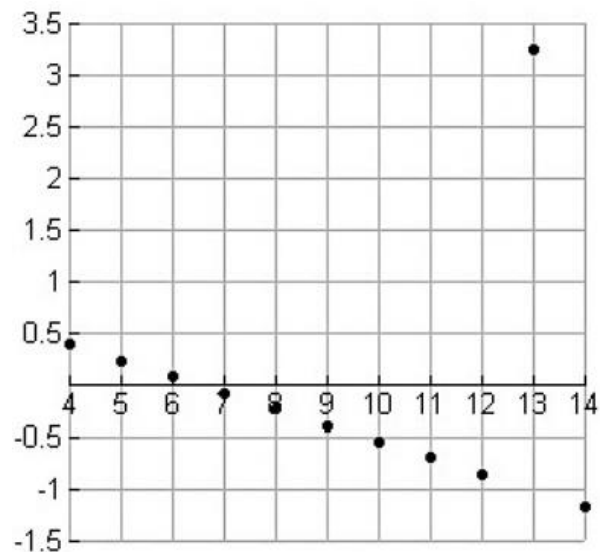


Residual Plot 2



The following graphs are residual plots. Analyze the residual plots to determine how well the line of best fit describes the data.

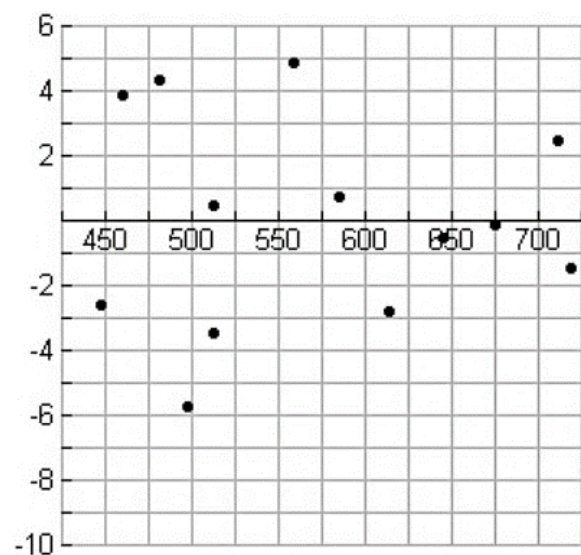
7. Plot 1



Analysis

**The line of best fit is not a good model since there is a pattern around the horizontal axis on the residual plot.**

8. Plot 2



Analysis

**The line of best fit is a good model since the points are randomly dispersed around the horizontal axis.**



Name: \_\_\_\_\_

## Modeling Data | 8.9

## Set, Go!

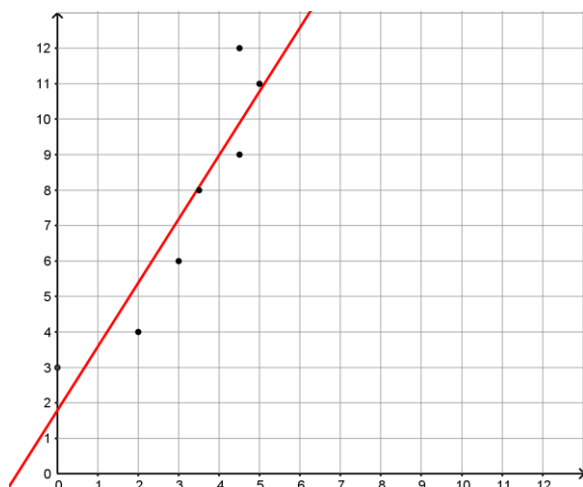


## Set

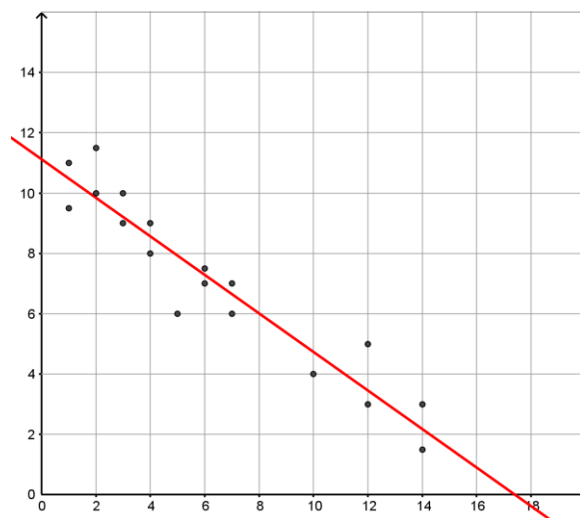
Topic: Creating and analyzing scatterplots.

Determine whether a linear or an exponential model would be best for the given scatterplots. Then sketch a model on the graph that could be used to make predictions.

1.

**Linear**

2.

**Linear**

## Go

Topic: Data and statistics, when to use two-way tables and when to use scatterplots.

3. In what situations does it make the most sense to use a two-way table and look at residual frequencies to make decisions or conclusions?

**It would make the most sense to use a two-way table and residual frequencies when looking at categorical data and comparing the quantities or percentages within those categories.**

4. In what situations does it make the most sense to use a scatterplot and a linear or exponential model to analyze and make decisions or draw conclusions?

**It would make the most sense to use a scatterplot or a linear/exponential model when determining the type of relationship between two sets of data and when making predictions about the variables.**

For each of the representations below, label as a *function* or *not a function*. If the data is not a function, say why. If it is a function then label as *linear*, *exponential* or *neither*.

5.

$x$	$y$
0	5
1	169
2	333
3	497

**Function; Linear**

6.

$x$	$y$
1	15
2	25
3	15
2	30

**Not a function because for the input of 2, there is more than 1 output.**

7.

$x$	$y$
2	5
3	10
4	20
5	40

**Function; Exponential**

8.  $g(x) = 4 - 12x$

**Function; Linear**

9.  $s(t) = 3 \cdot 4^{t-1}$

**Function; Exponential**

10. The amount of medicine in the blood stream of a cat changes as time passes. The initial dose of medicine is 80mm and the medicine breaks down 35% each hour.

**Function; Linear**

11.

Time	0	1	2	3	4
Money in Bank	250	337.50	455.63	615.09	830.38

**Function; Exponential**

12. Create a two-way table to organize the following information:

- 50 males earned an A, while 60 females earned an A.
- 60 males earned a B, and 80 females earned a B.
- 100 males earned a C, and 50 females earned a C.
- 40 males earned D, and 50 females earned a D.
- 30 males earned an F, and 20 females earned an F.

	Males	Females	Total
A	<b>50</b>	<b>60</b>	<b>110</b>
B	<b>60</b>	<b>80</b>	<b>140</b>
C	<b>100</b>	<b>50</b>	<b>150</b>
D	<b>40</b>	<b>50</b>	<b>90</b>
F	<b>30</b>	<b>20</b>	<b>50</b>
Total	<b>280</b>	<b>260</b>	<b>540</b>

13. Create a two-way table for the following scenario:

A survey was conducted to see if students get an allowance and if they have to do household chores. Of the 12 students that receive no allowance, 5 of them have no chores. There are 17 students who do chores and receive an allowance, while 6 students get an allowance without doing any chores.

	Do Chores	Do Not Do Chores	Total
Get an Allowance	17	6	23
Do Not Get an Allowance	7	5	12
Total	24	11	35