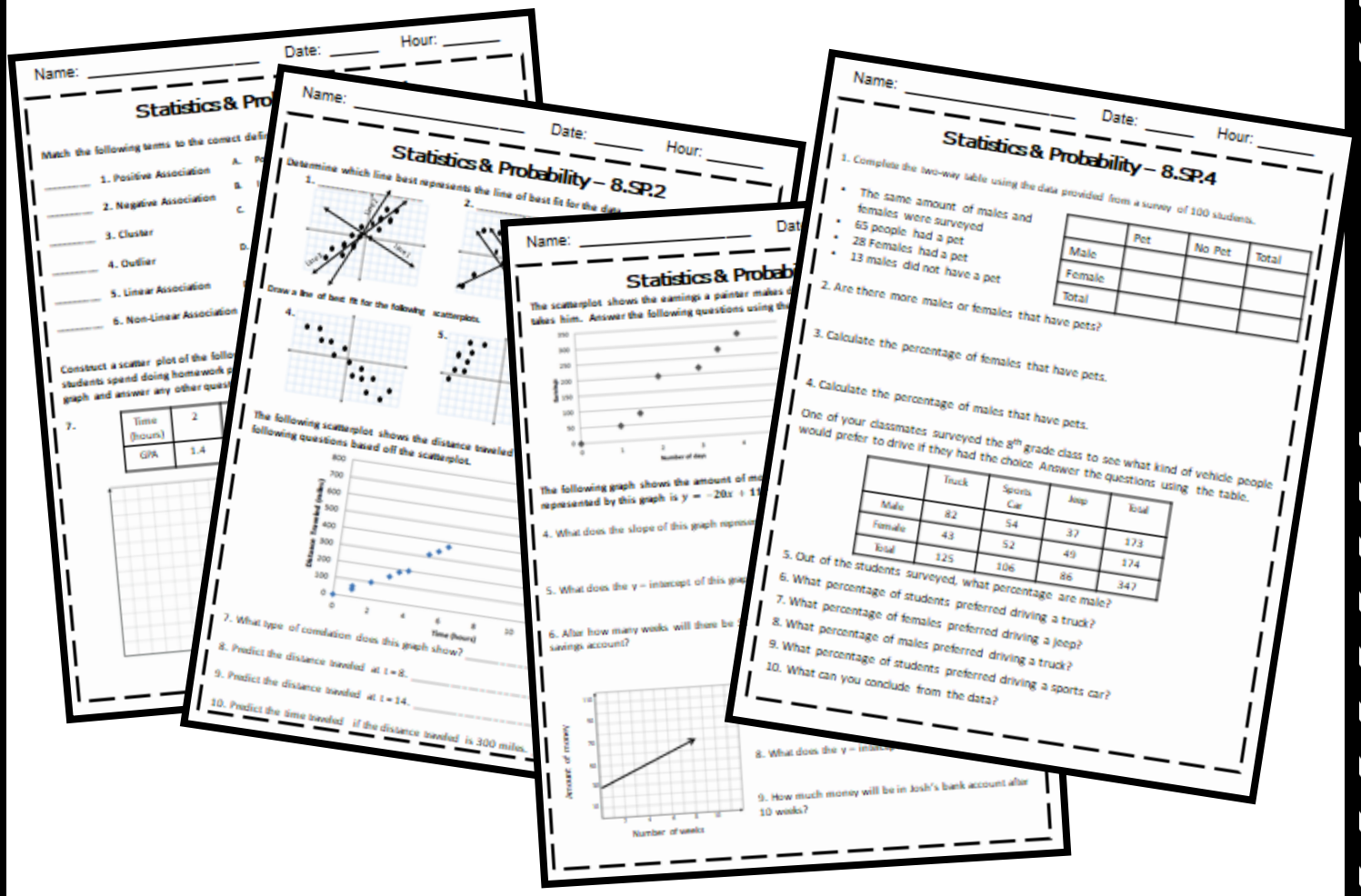
Grade 8

Statistics & Probability Worksheets



By: Math in the Midwest

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.1

Match the following terms to the correct definition:

_____ 1. Positive Association

_____ 2. Negative Association

_____ 3. Cluster

_____ 4. Outlier

_____ 5. Linear Association

_____ 6. Non-Linear Association

A. Points that are grouped closely together

B. Independent and dependent variable are both increasing

C. In a graphical format this type of association is connected in a straight line

D. In a graphical format this type of association is not a straight line, could be a curve.

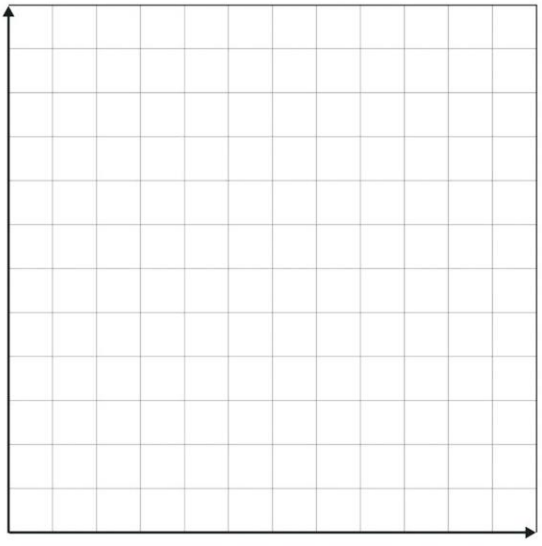
E. Point that varies greatly from all other data points

F. Dependent variable decreases as the independent variable increases.

Construct a scatter plot of the following given information showing the amount of time students spend doing homework per week and their overall GPA in school. Be sure to label the graph and answer any other questions.

7.

Time (hours)	2	4	6	8	10	15
GPA	1.4	3.2	2.5	3.0	3.4	3.8



A. Does this graph have a positive or negative association?

B. Does this graph have a linear or nonlinear association?

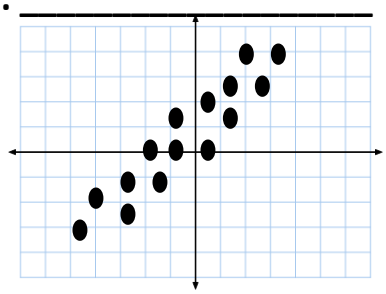
C. Does this graph have any outliers? If so, explain what the outlier is and why.

Name: _____ Date: _____ Hour: _____

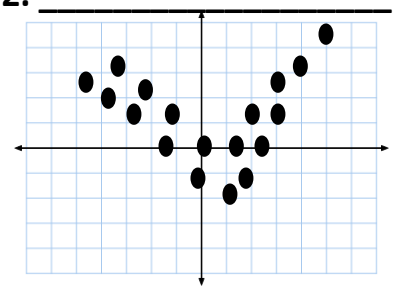
Statistics & Probability – 8.SP.1

Describe the pattern found in the following scatterplots as linear or nonlinear.

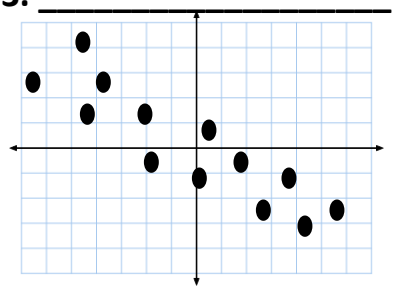
1. _____



2. _____

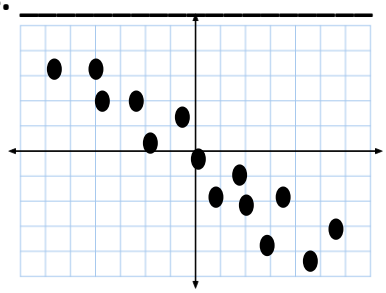


3. _____

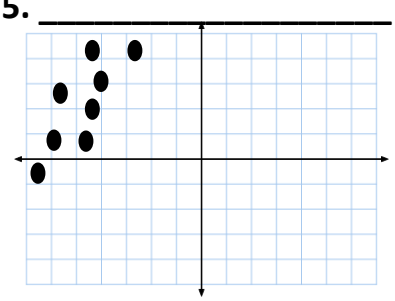


Determine if the following scatterplots have a positive or negative association.

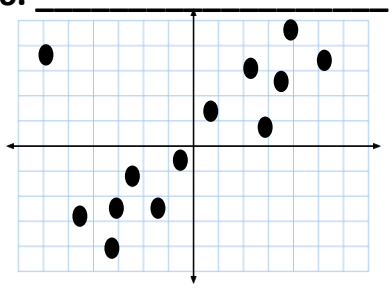
4. _____



5. _____

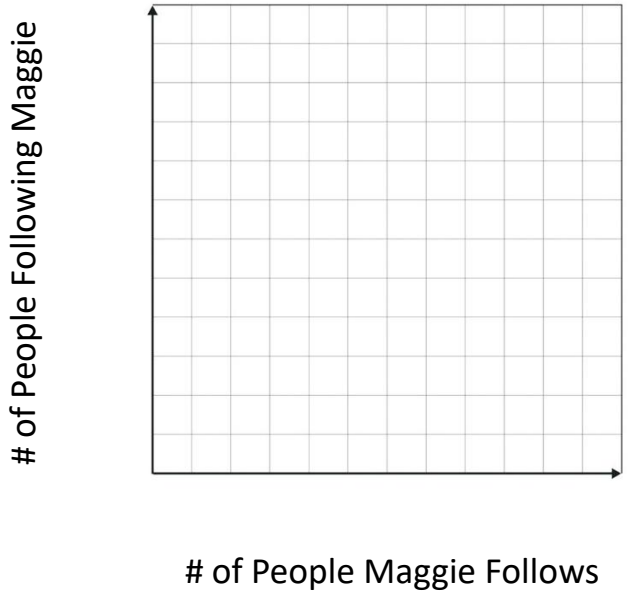


6. _____



7. Maggie collected data each week to determine if the number of people she followed impacted the number of people following her. Use the data given to construct a scatterplot and answer the following questions.

# of people Maggie Follows	# of People Following Maggie
0	0
20	14
40	30
60	52
80	65
100	85



A. Is there a positive or negative association? _____

B. Is the scatterplot linear or nonlinear? _____

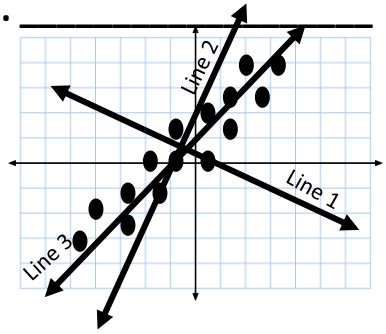
C. What does the data collected tell Maggie about the impact of the number of people she follows?

Name: _____ Date: _____ Hour: _____

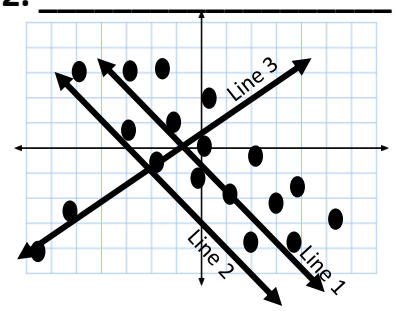
Statistics & Probability – 8.SP.2

Determine which line best represents the line of best fit for the data.

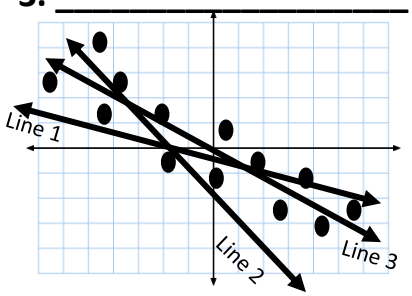
1. _____



2. _____

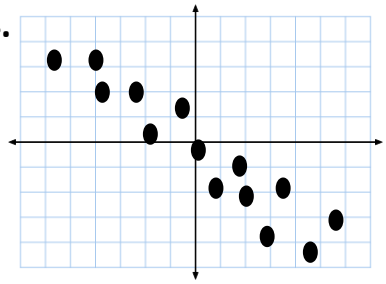


3. _____

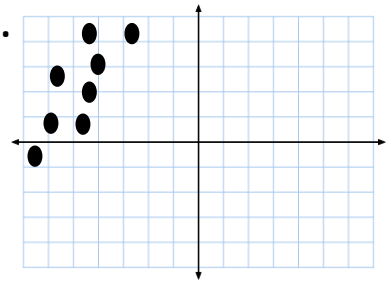


Draw a line of best fit for the following scatterplots.

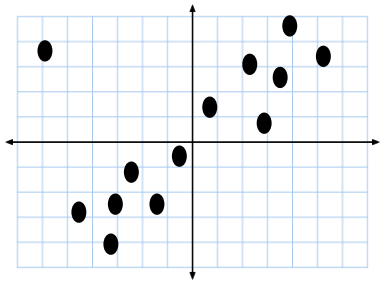
4.



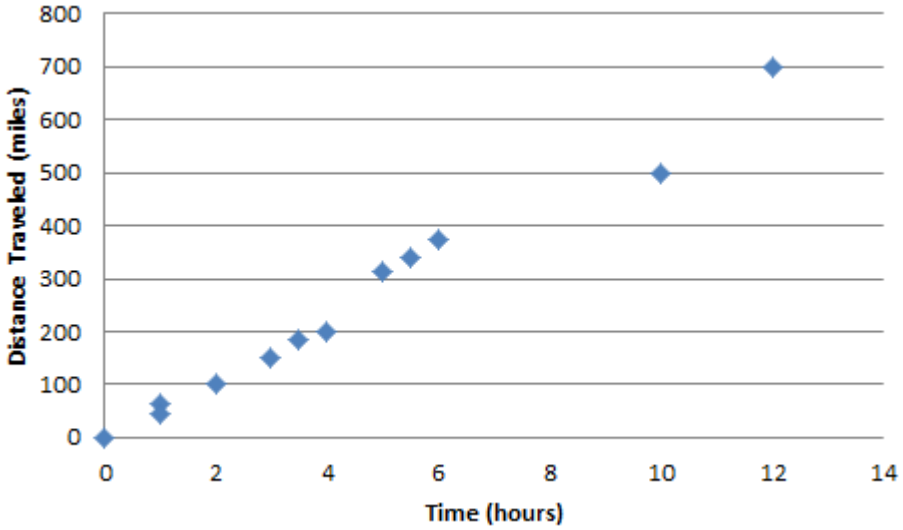
5.



6.



The following scatterplot shows the distance traveled in miles vs. time in hours. Answer the following questions based off the scatterplot.



7. What type of correlation does this graph show? _____

8. Predict the distance traveled at t = 8. _____

9. Predict the distance traveled at t = 14. _____

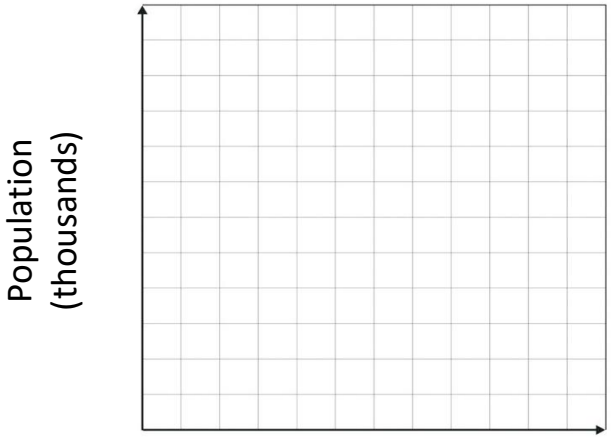
10. Predict the time traveled if the distance traveled is 300 miles. _____

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.2

1. The table lists the population of a city from the year 2013 to 2018. Sketch a scatterplot of the data and then answer the following questions.

Year	2013	2014	2015	2016	2017	2018
Population in thousands	90	75	80	60	40	25



2. Draw the line of best fit

3. Does the scatterplot have a positive or negative correlation?

4. Is the scatterplot linear or nonlinear?

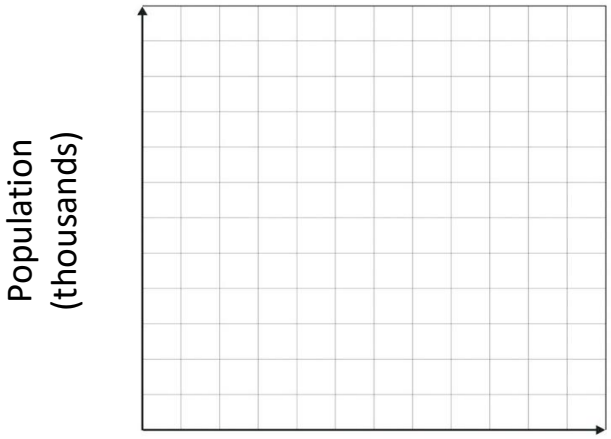
5. Write the equation of the line.

6. Predict what the population will be in the year 2020.

7. The table lists the population of a city from the year 1980 to 1985. Sketch a scatterplot of the data and then answer the following questions.

Year	1980	1981	1982	1983	1984	1985
Population in thousands	10	20	40	65	84	100

8. Draw the line of best fit



9. Does the scatterplot have a positive or negative correlation?

10. Is the scatterplot linear or nonlinear?

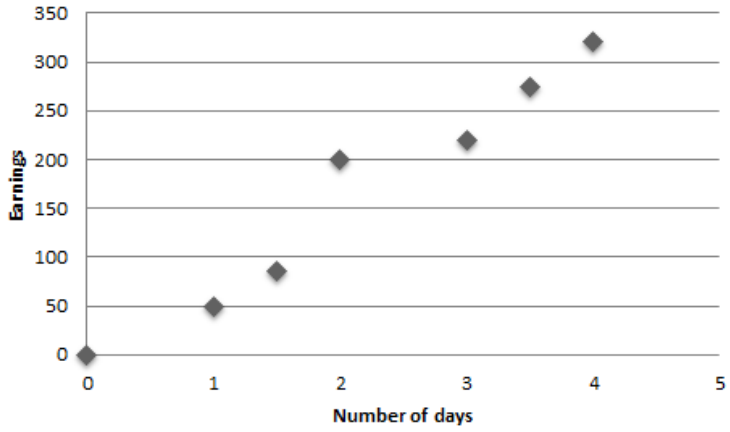
11. Write the equation of the line.

12. Predict what the population was in year 1975.

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.3

The scatterplot shows the earnings a painter makes depending on how many days the job takes him. Answer the following questions using the scatterplot.



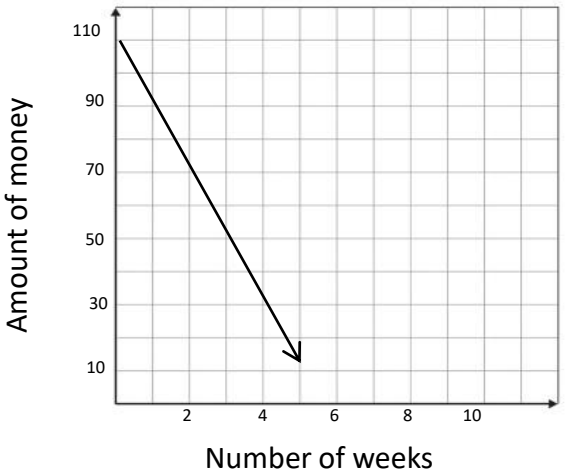
1. How much money will the painter make if he works for 1 day? _____
2. How much money will the painter make if he works for 5 days? _____
3. How much money is the painter making on average each day? _____

The following graph shows the amount of money Josh has in his savings account. The equation represented by this graph is $y = -20x + 110$.

4. What does the slope of this graph represent?

5. What does the y – intercept of this graph represent?

6. After how many weeks will there be $0 left in the savings account?

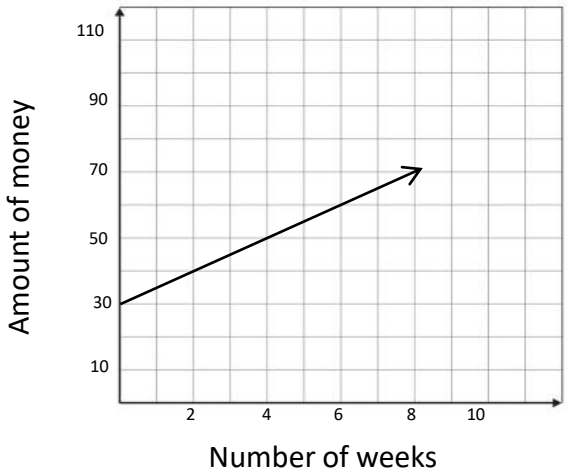


The following graph shows the amount of money Josh has in his savings account. The equation represented by this graph is $y = 5x + 30$.

7. What does the slope of this graph represent?

8. What does the y – intercept of this graph represent?

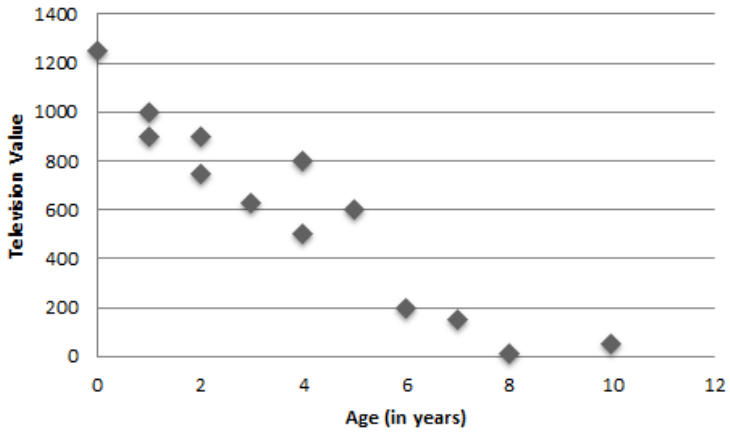
9. How much money will be in Josh's bank account after 10 weeks?



Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.3

The scatterplot shows the value of a TV in dollars over the time in years. Answer the following questions based on the scatterplot.



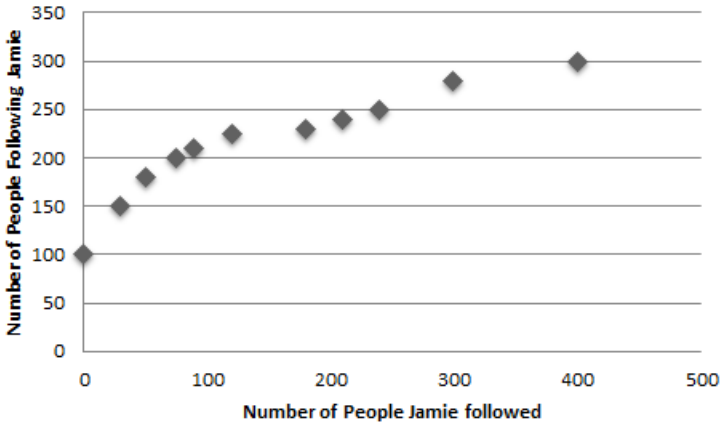
1. Draw a line of best fit and create an equation for the data.

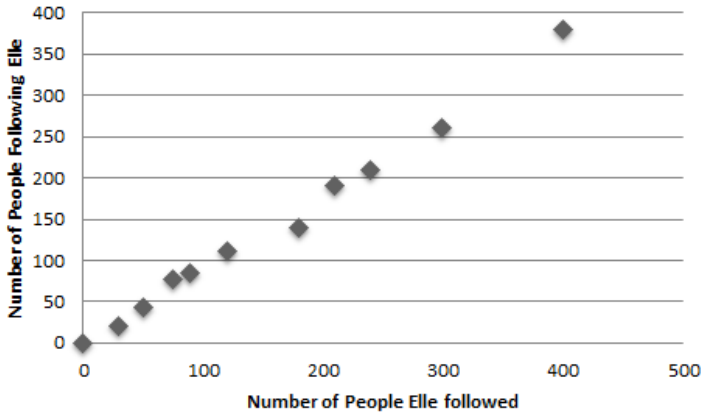
2. What does the slope of the equation mean?

3. What does the y – intercept of the equation mean?

4. Based on the data what would you expect the price of a TV to sale for after 5 years?

Jamie and Elle are best friends and are curious about how the number of people they follow on social media effects the number of people that follow them. Use the two scatterplots below to answer questions based off of Jamie and Elle's findings.





5. Create a line of best fit for both Jamie and Elle's scatterplots

6. What is the equation for Jamie's scatterplot? _____

7. What is the equation for Elle's scatterplot? _____

8. What does the slope and y – intercept mean for Jamie's scatterplot?

9. What does the slope and y – intercept mean for Elle's scatterplot?

10. Who can expect to have more people following them if they both hit 1,000 people that they follow?

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.4

1. Complete the following two way frequency table.

	Pets	No Pets	Total
Male	18	6	
Female	23	13	
Total			

2. Calculate the percentage of females who do not have a pet.

3. Calculate the percentage of males who do not have a pet.

4. Calculate the total percentage of people who have a pet.

5. Calculate the total percentage of people who do not have a pet.

6. Complete the following two way frequency table.

	Band	PE	Health	Total
7^{th}	41	45	17	
8^{th}	37	54	21	
Total				

7. Which grade had the most people interested in PE?

8. Which grade had the most people interested in band?

4. Calculate the total percentage of people who are in PE.

5. Calculate the total percentage of 8^{th} graders who are in health.

6. Calculate the total percentage of 7^{th} graders who are in band.

7. Which grade had the highest percentage of people who preferred health?

8. If you could only choose two classes to be offered for 7^{th} and 8^{th} graders what would they be and why?

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.4

1. Complete the two-way table using the data provided from a survey of 100 students.

- The same amount of males and females were surveyed
- 65 people had a pet
- 28 Females had a pet
- 13 males did not have a pet

	Pet	No Pet	Total
Male			
Female			
Total			

2. Are there more males or females that have pets?

3. Calculate the percentage of females that have pets.

4. Calculate the percentage of males that have pets.

One of your classmates surveyed the 8th grade class to see what kind of vehicle people would prefer to drive if they had the choice Answer the questions using the table.

	Truck	Sports Car	Jeep	Total
Male	82	54	37	173
Female	43	52	49	144
Total	125	106	86	317

5. Out of the students surveyed, what percentage are male?

6. What percentage of students preferred driving a truck?

7. What percentage of females preferred driving a jeep?

8. What percentage of males preferred driving a truck?

9. What percentage of students preferred driving a sports car?

10. What can you conclude from the data?

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.1

Match the following terms to the correct definition:

B 1. Positive Association

F 2. Negative Association

A 3. Cluster

E 4. Outlier

C 5. Linear Association

D 6. Non-Linear Association

A. Points that are grouped closely together

B. Independent and dependent variable are both increasing

C. In a graphical format this type of association is connected in a straight line

D. In a graphical format this type of association is not a straight line, could be a curve.

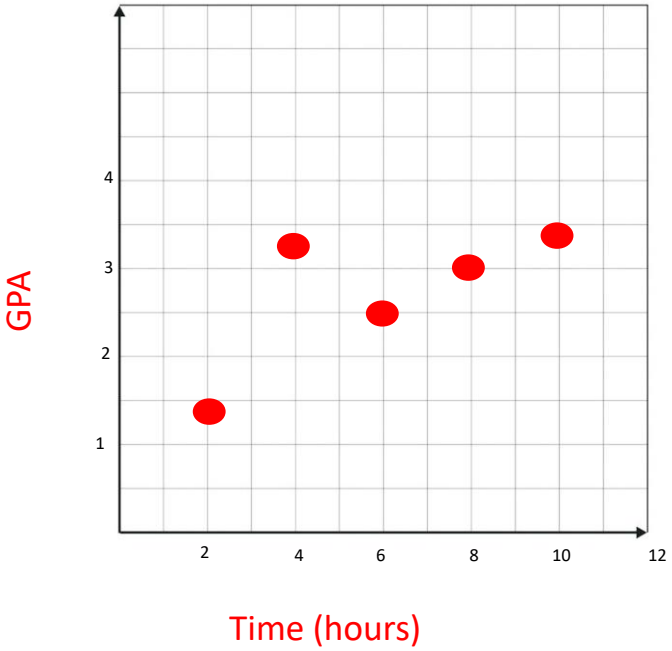
E. Point that varies greatly from all other data points

F. Dependent variable decreases as the independent variable increases.

Construct a scatter plot of the following given information showing the amount of time students spend doing homework per week and their overall GPA in school. Be sure to label the graph and answer any other questions.

7.

Time (hours)	2	4	6	8	10	15
GPA	1.4	3.2	2.5	3.0	3.4	3.8



A. Does this graph have a positive or negative association?

positive

B. Does this graph have a linear or nonlinear association?

linear

C. Does this graph have any outliers? If so, explain what the outlier is and why.

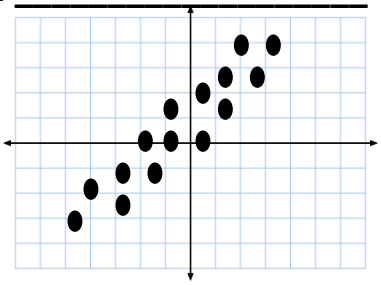
(4, 3.2) – varies from the other data points

Name: _____ Date: _____ Hour: _____

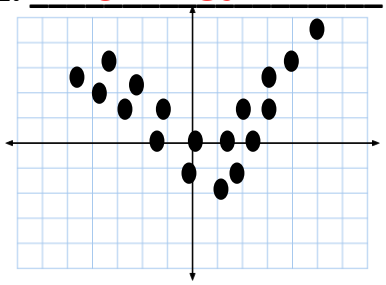
Statistics & Probability – 8.SP.1

Describe the pattern found in the following scatterplots as linear or nonlinear.

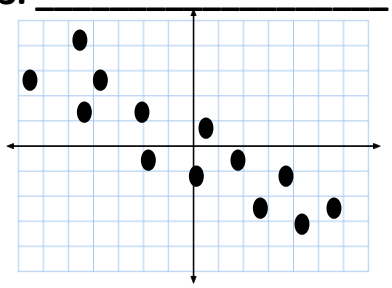
1. linear



2. nonlinear

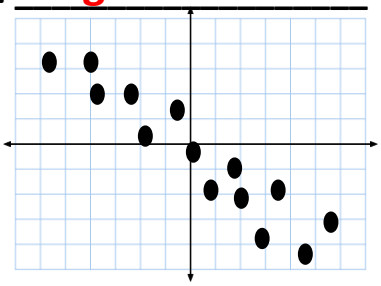


3. linear

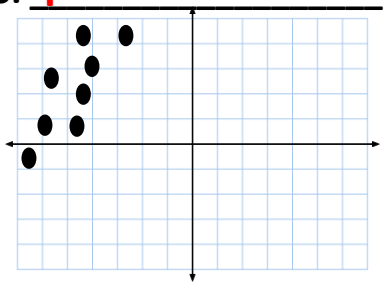


Determine if the following scatterplots have a positive or negative association.

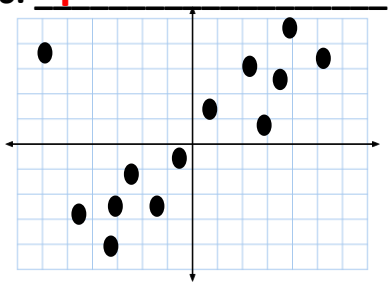
4. negative



5. positive

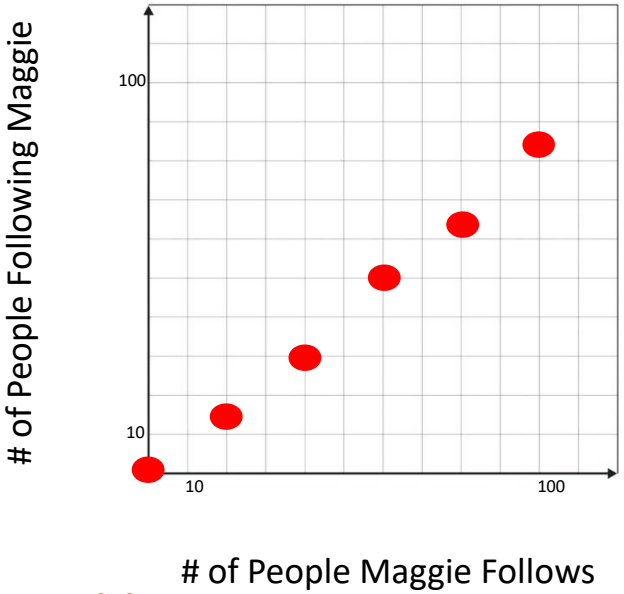


6. positive



7. Maggie collected data each week to determine if the number of people she followed impacted the number of people following her. Use the data given to construct a scatterplot and answer the following questions.

# of people Maggie Follows	# of People Following Maggie
0	0
20	14
40	30
60	52
80	65
100	85



A. Is there a positive or negative association? positive

B. Is the scatterplot linear or nonlinear? linear

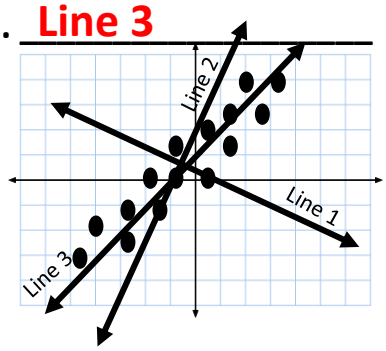
C. What does the data collected tell Maggie about the impact of the number of people she follows? **The more people Maggie follows the more people will follow her.**

Name: _____ Date: _____ Hour: _____

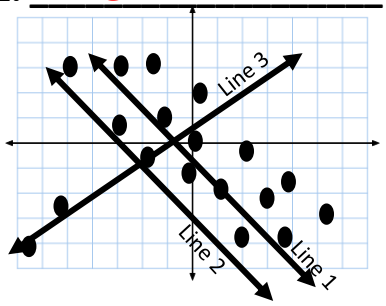
Statistics & Probability – 8.SP.2

Determine which line best represents the line of best fit for the data.

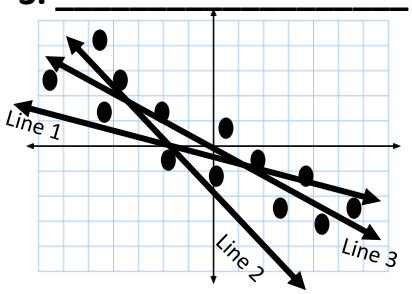
1. Line 3



2. Line 1

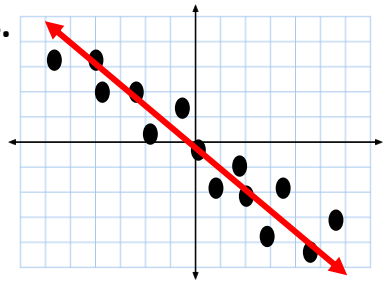


3. Line 3

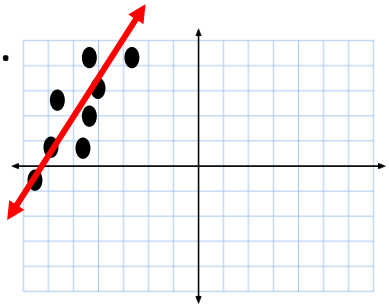


Draw a line of best fit for the following scatterplots.

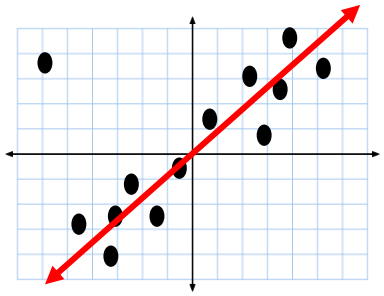
4.



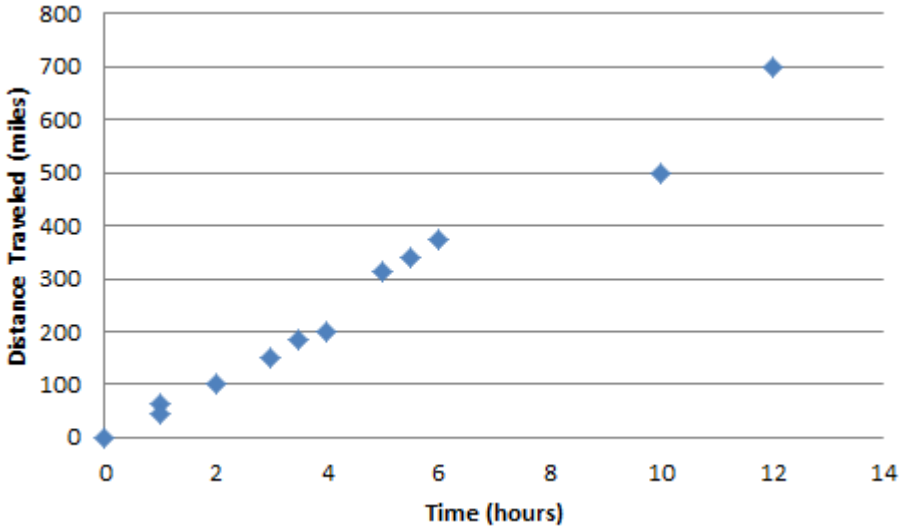
5.



6.



The following scatterplot shows the distance traveled in miles vs. time in hours. Answer the following questions based off the scatterplot.



7. What type of correlation does this graph show? positive

8. Predict the distance traveled at t = 8. 450 miles

9. Predict the distance traveled at t = 14. 800 miles

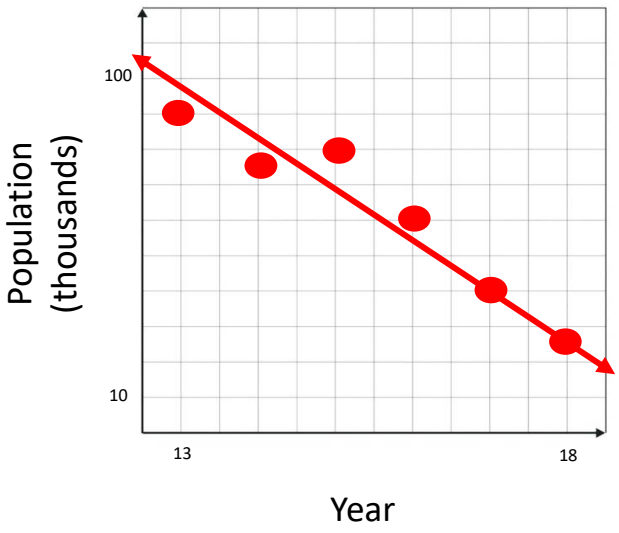
10. Predict the time traveled if the distance traveled is 300 miles. 5 hours

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.2

1. The table lists the population of a city from the year 2013 to 2018. Sketch a scatterplot of the data and then answer the following questions.

Year	2013	2014	2015	2016	2017	2018
Population in thousands	90	75	80	60	40	25



2. Draw the line of best fit

3. Does the scatterplot have a positive or negative correlation?

negative

4. Is the scatterplot linear or nonlinear?

linear

5. Write the equation of the line.

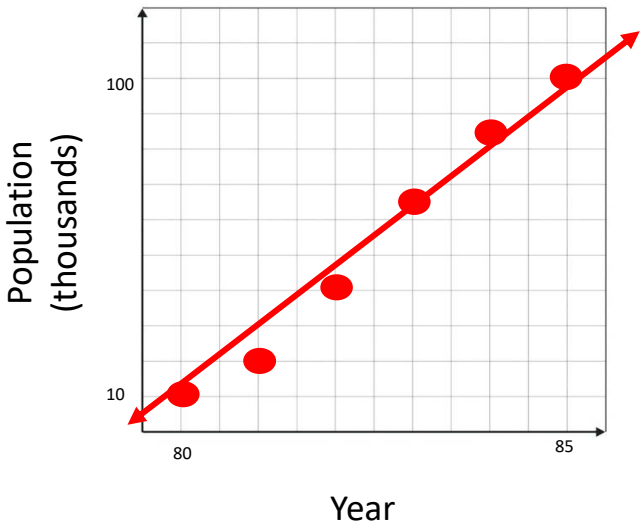
$$y = -10x + 105$$

6. Predict what the population will be in the year 2020.

5 thousand

7. The table lists the population of a city from the year 1980 to 1985. Sketch a scatterplot of the data and then answer the following questions.

Year	1980	1981	1982	1983	1984	1985
Population in thousands	10	20	40	65	84	100



8. Draw the line of best fit

9. Does the scatterplot have a positive or negative correlation?

positive

10. Is the scatterplot linear or nonlinear?

linear

11. Write the equation of the line.

$$y = x + 8$$

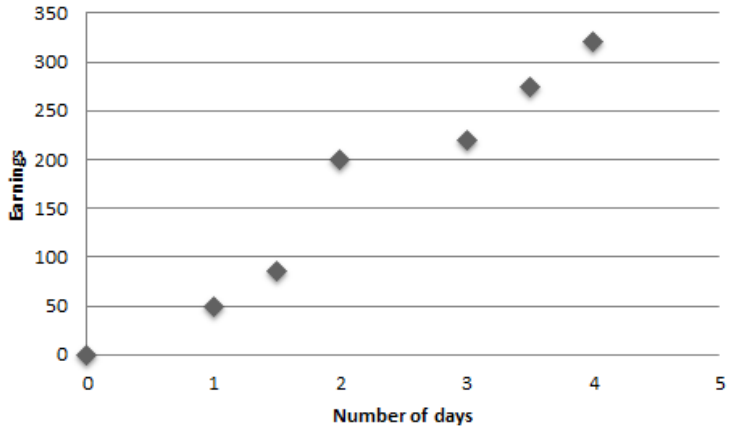
12. Predict what the population was in year 1975.

1 or 2 thoursand

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.3

The scatterplot shows the earnings a painter makes depending on how many days the job takes him. Answer the following questions using the scatterplot.



1. How much money will the painter make if he works for 1 day? **$50**
2. How much money will the painter make if he works for 5 days? **$400**
3. How much money is the painter making on average each day? **Around $75**

The following graph shows the amount of money Josh has in his savings account. The equation represented by this graph is $y = -20x + 110$.

4. What does the slope of this graph represent?

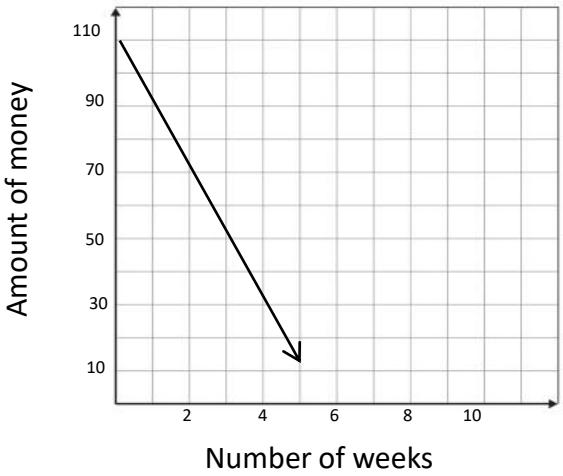
How much money Josh is losing per week

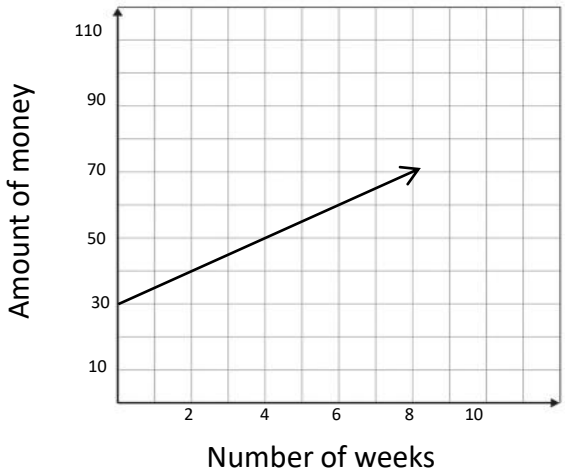
5. What does the y – intercept of this graph represent?

The amount of money that started in Josh's savings account.

6. After how many weeks will there be $0 left in the savings account?

5.5 weeks





The following graph shows the amount of money Josh has in his savings account. The equation represented by this graph is $y = 5x + 30$.

7. What does the slope of this graph represent?

How much money Josh is gaining each week

8. What does the y – intercept of this graph represent?

The amount of money that started in Josh's savings account

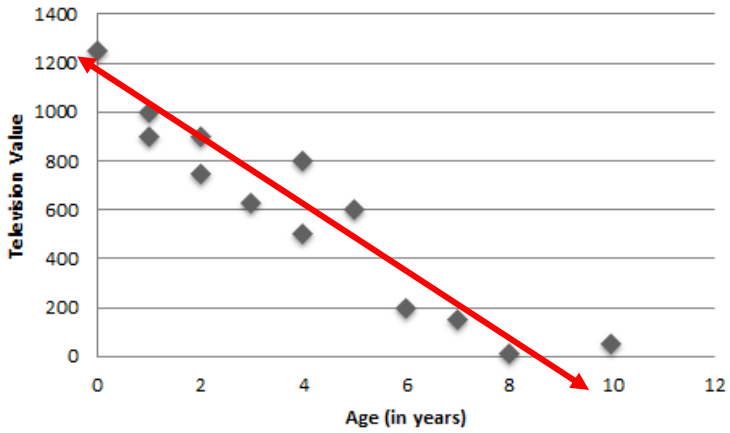
9. How much money will be in Josh's bank account after 10 weeks?

$80

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.3

The scatterplot shows the value of a TV in dollars over the time in years. Answer the following questions based on the scatterplot.



1. Draw a line of best fit and create an equation for the data.

$$y = -200x + 1200$$

2. What does the slope of the equation mean?

The value the TV loses every year

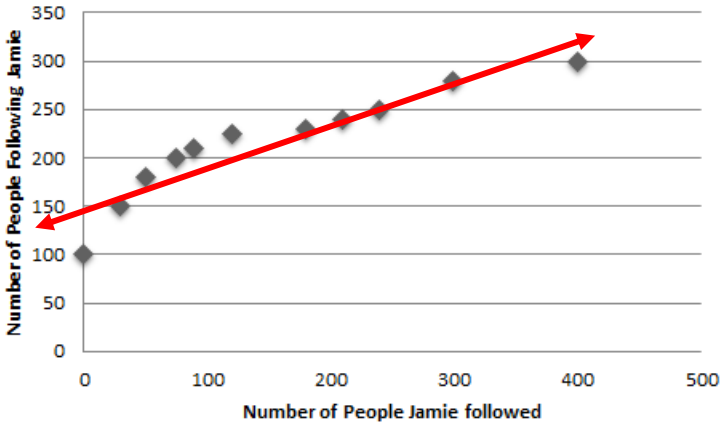
3. What does the y – intercept of the equation mean?

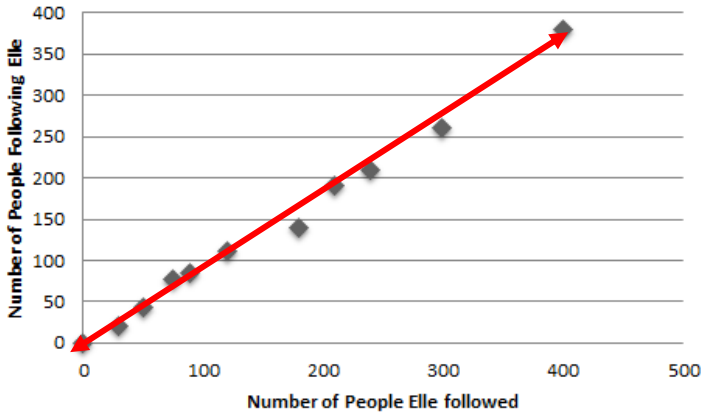
The original value of the TV

4. Based on the data what would you expect the price of a TV to sale for after 5 years?

Around $200

Jamie and Elle are best friends and are curious about how the number of people they follow on social media effects the number of people that follow them. Use the two scatterplots below to answer questions based off of Jamie and Elle's findings.





5. Create a line of best fit for both Jamie and Elle's scatterplots

6. What is the equation for Jamie's scatterplot? $y = \frac{1}{2}x + 140$

7. What is the equation for Elle's scatterplot? $y = x$

8. What does the slope and y – intercept mean for Jamie's scatterplot?

Slope – For every 1 person that follows Jamie she follows 2 people.

Y – intercept – She started off with 140 people following her.

9. What does the slope and y – intercept mean for Elle's scatterplot?

Slope – For every 1 person that follows Elle she follows one person.

Y – intercept – She started off with 0 people following her.

10. Who can expect to have more people following them if they both hit 1,000 people that they follow? **Elle**

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.4

1. Complete the following two way frequency table.

	Pets	No Pets	Total
Male	18	6	24
Female	23	13	36
Total	41	19	60

2. Calculate the percentage of females who do not have a pet.

36 percent

3. Calculate the percentage of males who do not have a pet.

25 percent

4. Calculate the total percentage of people who have a pet.

68 percent

5. Calculate the total percentage of people who do not have a pet.

32 percent

6. Complete the following two way frequency table.

	Band	PE	Health	Total
7th	41	45	17	103
8th	37	54	21	112
Total	78	99	38	215

7. Which grade had the most people interested in PE?

8th Grade

8. Which grade had the most people interested in band?

7th Grade

4. Calculate the total percentage of people who are in PE.

46 percent

5. Calculate the total percentage of 8th graders who are in health.

19 percent

6. Calculate the total percentage of 7th graders who are in band.

40 percent

7. Which grade had the highest percentage of people who preferred health?

8th Grade by 3 percent

8. If you could only choose two classes to be offered for 7th and 8th graders what would they be and why? **Band and PE because only 18% of the 7th and 8th graders are in health compared to 36% in band and 46% in PE.**

Name: _____ Date: _____ Hour: _____

Statistics & Probability – 8.SP.4

1. Complete the two-way table using the data provided from a survey of 100 students.

- The same amount of males and females were surveyed
- 65 people had a pet
- 28 Females had a pet
- 13 males did not have a pet

	Pet	No Pet	Total
Male	37	13	50
Female	28	22	50
Total	65	35	100

2. Are there more males or females that have pets?

Males

3. Calculate the percentage of females that have pets.

56 percent

4. Calculate the percentage of males that have pets.

74 percent

One of your classmates surveyed the 8th grade class to see what kind of vehicle people would prefer to drive if they had the choice Answer the questions using the table.

	Truck	Sports Car	Jeep	Total
Male	82	54	37	173
Female	43	52	49	144
Total	125	106	86	317

5. Out of the students surveyed, what percentage are male? **54.6 percent**

6. What percentage of students preferred driving a truck? **39.4 percent**

7. What percentage of females preferred driving a jeep? **34 percent**

8. What percentage of males preferred driving a truck? **47.4 percent**

9. What percentage of students preferred driving a sports car? **33 percent**

10. What can you conclude from the data?

Answers will vary

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~Math in the Midwest