Algebra 1 Name_____ ID: 1

HW 1.3 Linear Regression & Correlation

Date_____ Period____

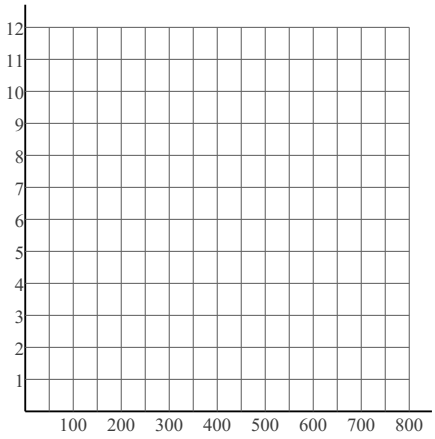
Construct a scatter plot. State if there appears to be a positive correlation, negative correlation, or no correlation.

1)

X	Y
40	5
50	8
90	5
300	3

X	Y
320	4
380	4
390	3

X	Y
570	12
700	5
800	5

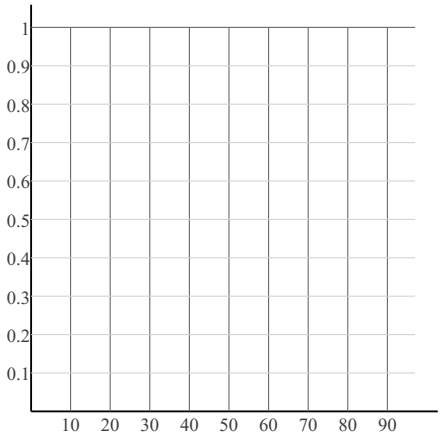


2)

X	Y
2	0.5
2	0.5
3	0.5
6	0.5

X	Y
7	0.4
18	0.4
69	0.2

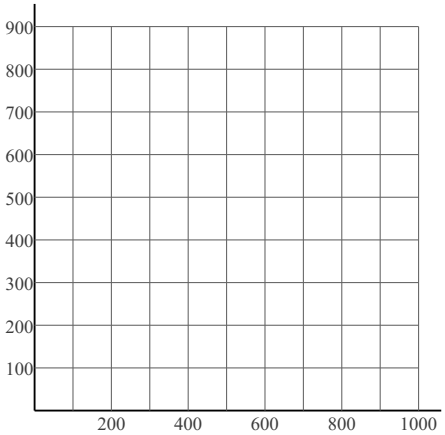
X	Y
75	0.2
88	0.1
97	0.1



3)

X	Y
40	900
40	900
130	800
210	700
370	600

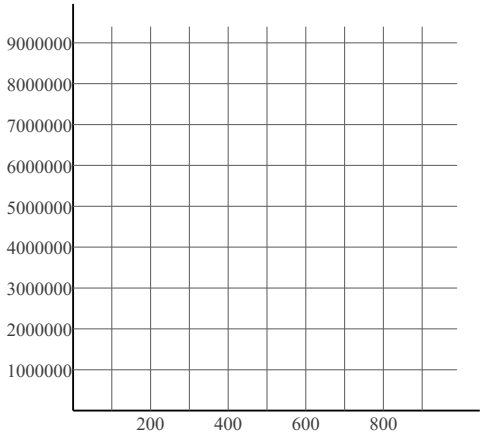
X	Y
500	600
560	500
860	300
970	200
1,000	200



4)

X	Y
50	600
320	8,100
560	104,500
630	226,800
760	826,100

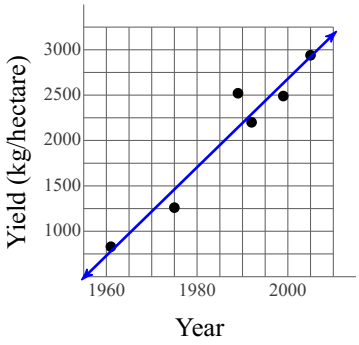
X	Y
810	1,422,500
820	1,617,300
840	2,055,300
900	3,857,500
990	9,395,800



5) With the help of scientists, farmers in the Philippines have been able to produce more and more grain per hectare each year. Here are the crop yields for several years:

Year	Yield (kg/hectare)
1961	830
1975	1,260
1989	2,520
1992	2,200
1999	2,490
2005	2,940

The crop yield can be described by the equation $y = 48.7x - 94800$ where x is the year and y is the grain yield in kilograms per hectare (kg/ha).



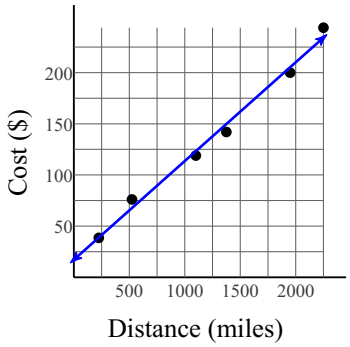
a) According to the model, what was the crop yield in 1969? Round your answer to the nearest whole number.

b) Assuming that this trend continues, what crop yield is predicted for the year 2029 by the model? Round your answer to the nearest whole number.

6) The cost of a flight is related to the distance traveled:

Miles	Cost ($)
225	38.5
525	76.1
1,100	119
1,375	142
1,950	200
2,250	244

This can be modeled by the equation $y = 0.0965x + 17.2$ where x is distance in miles and y is cost in dollars.



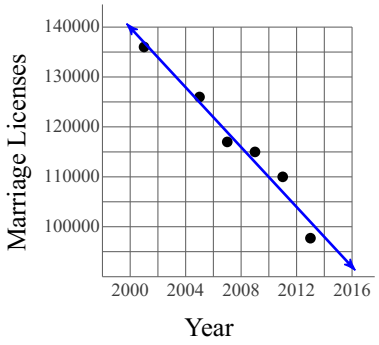
a) Using this model, what would be the cost of a flight that travels 800 miles? Round your answer to the nearest dollar.

b) According to the model, how much would a 3000-mile flight cost? Round your answer to the nearest dollar.

7) The number of marriage licenses issued by Clark County Nevada, the county where Las Vegas is located, has been decreasing since the year 2000:

Year	Marriage Licenses
2001	136,000
2005	126,000
2007	117,000
2009	115,000
2011	110,000
2013	97,700

This can be modeled by the equation $y = -2995.7x + 6131300$ where x is the year and y is the number of marriage licenses issued.



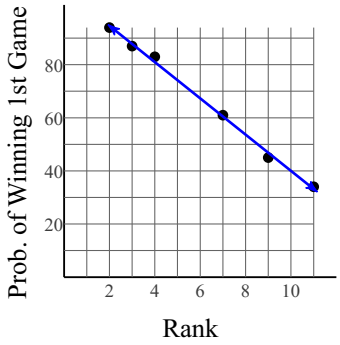
a) According to the model, how many marriage licenses were issued in 2006? Round your answer to the nearest hundred.

b) Using this model, how many marriages licenses would you expect to be issued in 2017? Round your answer to the nearest hundred.

8) By examining past tournaments, it's possible to calculate the probability that a school wins their first game in the national college basketball tournament.

Rank	Probability (%)
2	94
3	87
4	83
7	61
9	45
11	34

Each school's rank going into the tournament is a strong indicator of their likelihood of winning their first game. This can be expressed as $y = -6.83x + 108$ where x is their rank (out of 16) and y is the percent chance they have of winning their first game.



a) According to the model, a school ranked #8 has what probability of winning their first game? Round your answer to the nearest percent.

b) Using this model, a school ranked #14 has what probability of winning their first game? Round your answer to the nearest percent.