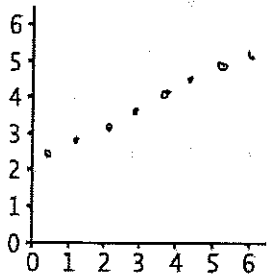
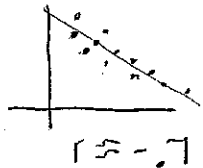


Scatterplots and Line of Best Fit

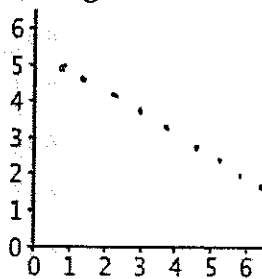
Positive Correlation



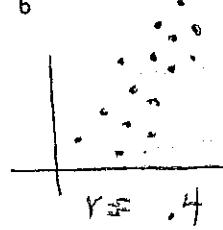
$r = 1$



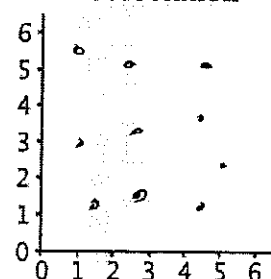
Negative Correlation



$r = -1$



No Correlation



$r = 0$

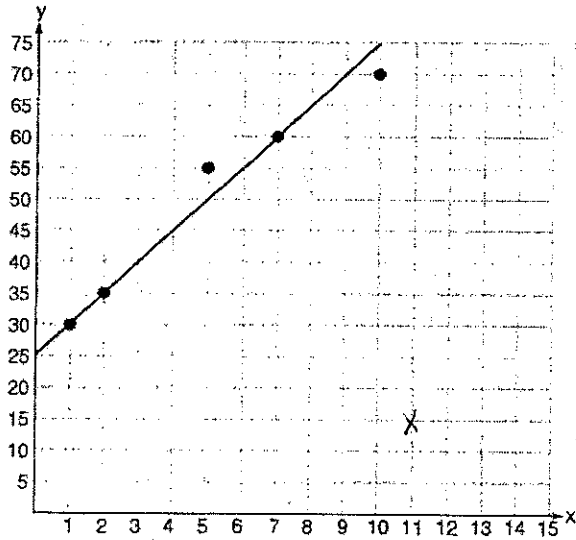
Correlation Coefficient "R-Factor"

If $r = 1$, there is a perfect positive correlation.

- The closer r is to 1, the stronger the positive correlation.
- If $r = -1$, there is a perfect negative correlation.
- If $r = 0$, there is no correlation.



Find the equation for the line of best fit shown in the graph below.



X	Y
1	30
2	35
5	55
7	60
10	70

*Watch for outliers!

a = slope
 b = y-intercept
 r = correlation coefficient

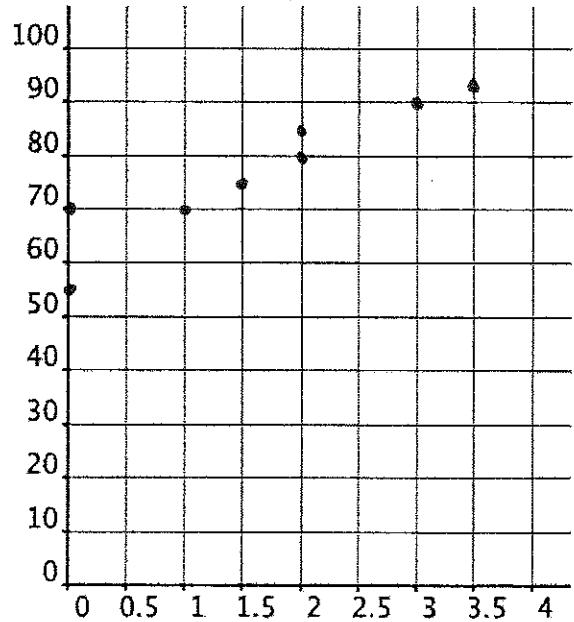
$f(x) = 4.54x + 27.31$
 (prediction equation)

$r = .983$

Strong positive relationship

The hours that a student studies for a test is correlated to the grade they receive.

Hours (x)	Grade (y)
0	55
0	70
1	70
1.5	75
2	85
2	80
3	90
3.5	92



a) Construct a scatter plot on the given axis.

b) What is the correlation coefficient?

$$a = 8.96$$

$$b = 62.57$$

$$r = .931$$

$$f(x) = 8.96x + 62.57$$

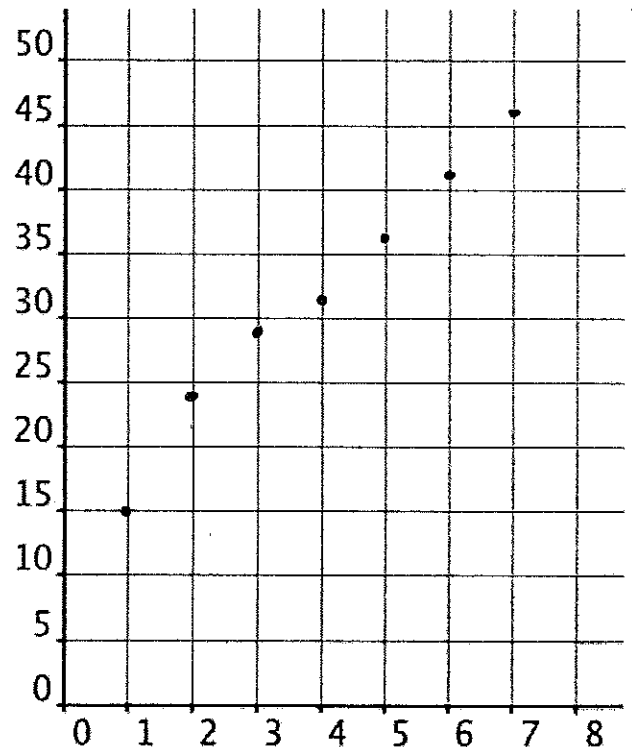
c) Predict what a student's grade would be after studying for 4 hours.

$$= 8.96(4) + 62.57$$

$$= 98.41$$

Use the data below to answer the following questions.

Dog Years (x)	Human Years (y)
1	15
2	24
3	28
4	32
5	37
6	42
7	47



a) Construct a scatter plot on the given axis.

b) Find the equation for the line of best fit and the correlation coefficient.

$$f(x) = 5.04x + 12$$

$$r = .994$$

c) Use the equation to determine how many human years is equivalent to 13 dog years.

$$= 5.04(13) + 12$$

$$= 77.52$$

Calculator Instructions:

1) Clear memory

2.) data

3.) L1 | L2
|
|

Enter the data.

4.) 2nd data

5.) 2: 2-Var Stats

6.) X DATA: L1

Y DATA: L2

CALC

7.) D: $a = \text{slope}$

E: $b = \text{y-intercept}$

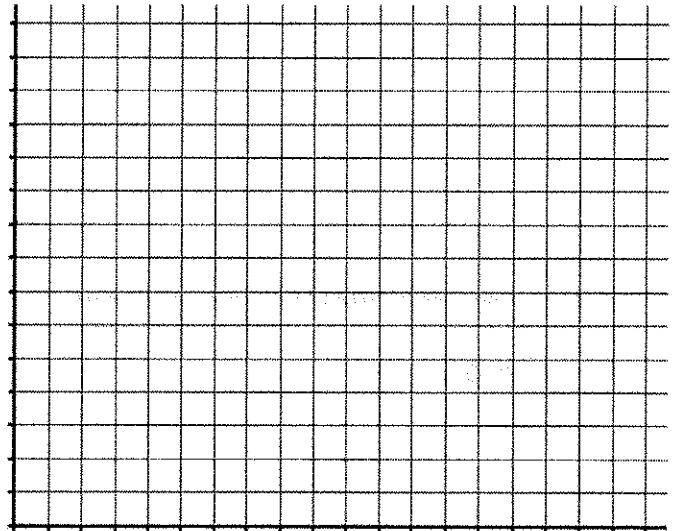
F: $r = \text{correlation coefficient}$

Algebra 2
Scatterplots and Line of Best Fit

Name _____
Date _____ Hour _____

The following table shows the speed and height of roller coasters in North America.

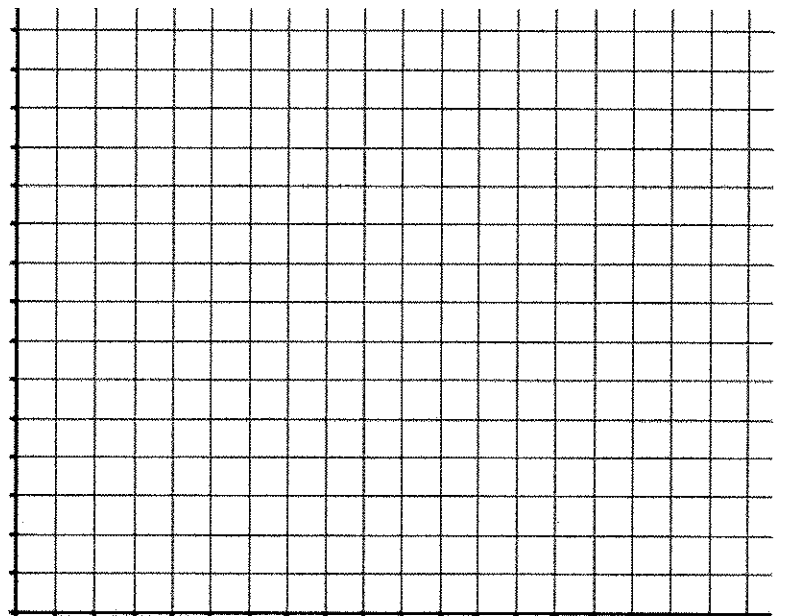
Maximum Speed, in mph. (x)	45	50	54	60	65	70
Maximum Height, in feet. (y)	63	80	105	118	141	107



- a) Construct a scatter plot on the given axis.
- b) What is the correlation coefficient?
- c) Determine the approximate height of a roller coaster that travels at 75 mph.

The table below shows the IQ of 7 senior students along with the number of hours of TV each student views per week. On the graph below, construct a scatter plot and find a line of best fit that will serve as a prediction equation for the data and find the correlation coefficient.

IQ (x)	115	105	95	110	100	90	110
Hours (y)	4	6	11	5	8	10	6



- a) How many hours would a student with an IQ of 120 be expected to watch?

Spiral Review

Solve each equation and check your solutions.

1. $2|4x - 1| + 3 = 9$

2. $|x + 6| + 9 = 8$

Solve each inequality and graph your solutions.

3. $4 - 7x \geq 2(x + 3)$

4. $-5 < 4x + 3 < 19$

5. $|a| + 2 < 15$