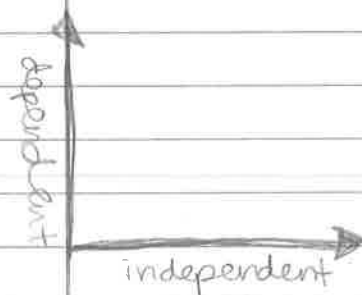


Target 4-5 Scatter Plots + Lines of Fit

Scatter Plots

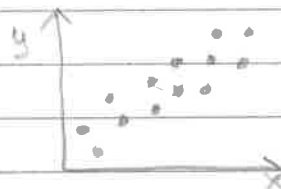
- shows the relationship between a set of data with two variables
- Graphed as ordered pairs
- used to investigate the relationship between the two quantities.



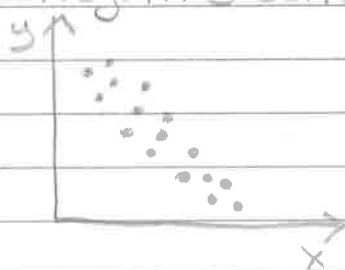
Describe the Data

Correlation
Trends

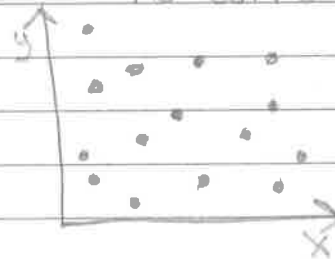
Positive correlation



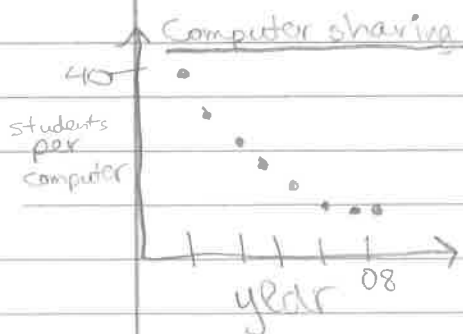
Negative correlation



no correlation



Technology: The graph shows the average number of students per computer in Maria's school.



Determine correlation:

Negative correlation

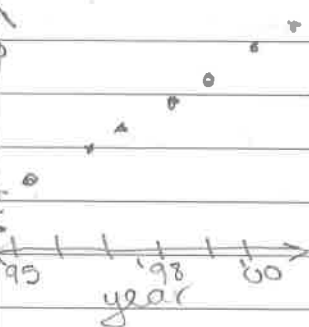
Explain:

As the years pass, the students per computer is going down.

of

of prescriptions

Graph of number of mail-order prescriptions.



Determine correlation

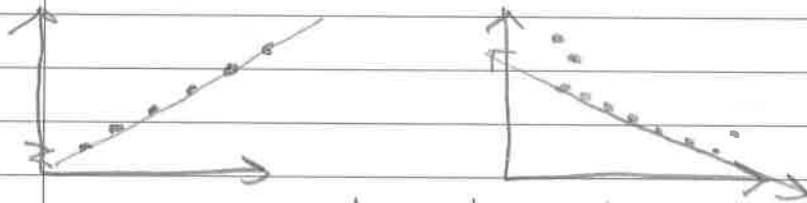
- positive correlation

Explain: In the years since 1995, # of mail order prescriptions has increased.

Line of Best Fit

A line of best fit (or trend line) is a straight line that best represents the data on a scatter plot.

The line may pass through some of the points, none of the points, or all of the points.



you need to have the same amount of data on each side of the line.

How does the Line of Best Fit and Correlation work together?

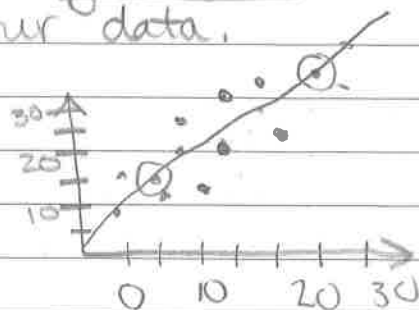
Writing Equations for Line of best fit...

You must pick 2 points that are on the line that you drew and are NOT points from your data.

Example:

(10, 10)

(26, 25)



12-10-13

Algebra I

① (on graph paper) - Determine correlation - Draw line of best fit

- pick two points

$$\begin{matrix} (-3, 4) & (4, -3) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$m = \frac{4 - (-3)}{-3 - 4} = \frac{7}{-7} = -1$$

point-slope $y - 4 = -1(x - (-3))$

convert to $y - 4 = -1x + 3$

slope-int

$$y = -x + 1$$

② (on graph paper) - Determine correlation - Draw line of best fit - pick two points

positive correlation: the more study time, the higher the test score

two points: (10, 60) (60, 90)

$$m = \frac{90 - 60}{60 - 10} = \frac{30}{50} = \frac{3}{5}$$

$$y - 60 = \frac{3}{5}(x - 10)$$

$$y - 60 = \frac{3}{5}x - \frac{30}{5}$$

$$y - 60 = \frac{3}{5}x - 6$$

$$y = \frac{3}{5}x + 54$$

if no study time, test score would be 54.

③ Every month, the length of a baby alligator is measured. Write an equation of best fit + predict the alligator length next September.

	Sept.						April
month	0	1	2	3	4	5	6
length	22.0	22.5	23.5	25.0	26.0	27.5	28.5
							29.5

Step 1 Make a scatter plot

Step 2 Determine Correlation

Step 3 Draw a line of fit. Pick two points on the line. Not from data.

Step 2: positive correlation

Step 3: $(8, 30)$ $(12, 34)$

$$m = \frac{30-34}{8-12} = \frac{-4}{-4} = 1$$

$$y - 30 = 1(x - 8)$$

$$y - 30 = x - 8$$

+30 +30

$$\boxed{y = x + 22}$$

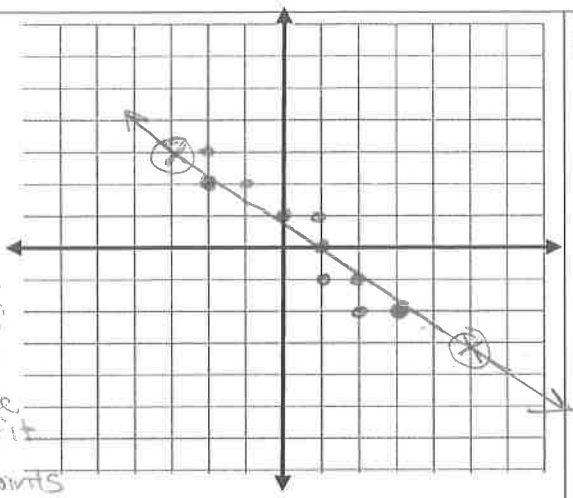
next Sept: $(12, ?)$

$$y = 12 + 22 = 34$$

$$\boxed{y = 34 \text{ inches}}$$

In the following September, the alligator will be 34 inches long.

1.



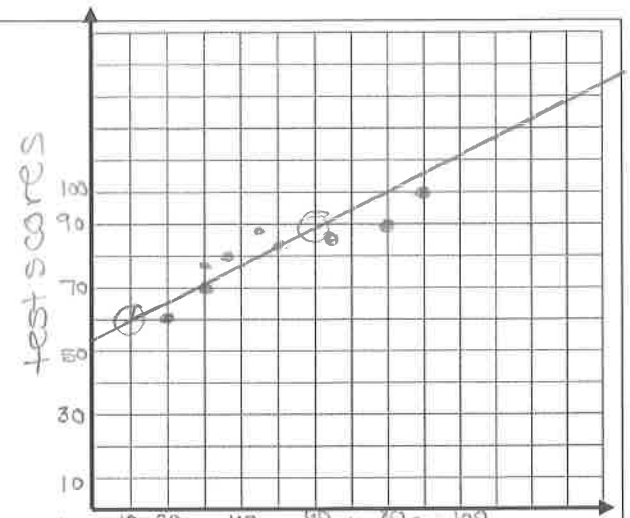
Determine Correlation negative

Draw a line of best fit

Pick two points

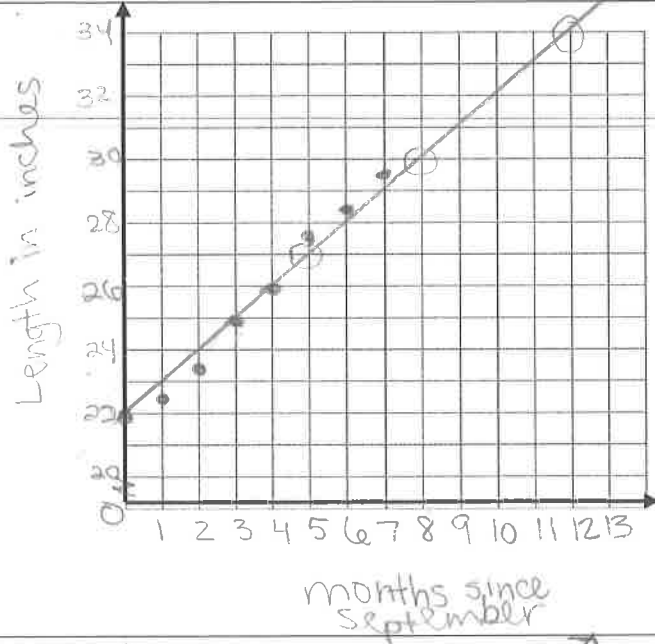
x	-2	-2	-1	0	1	1	1	1	2	2	3
y	2	3	2	1	0	1	-1	-1	-2	-2	-2

2.

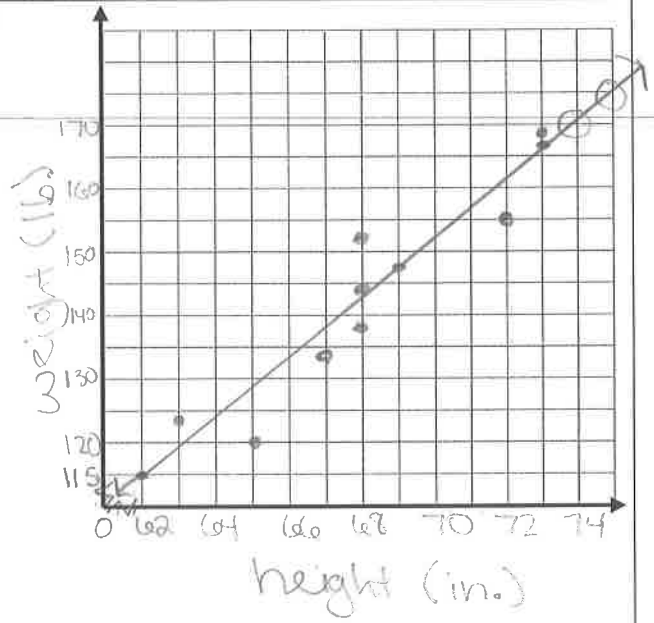


x	20	65	30	90	45	30	80	50	35	Study time
y	60	85	70	100	88	77	90	82	80	test scores

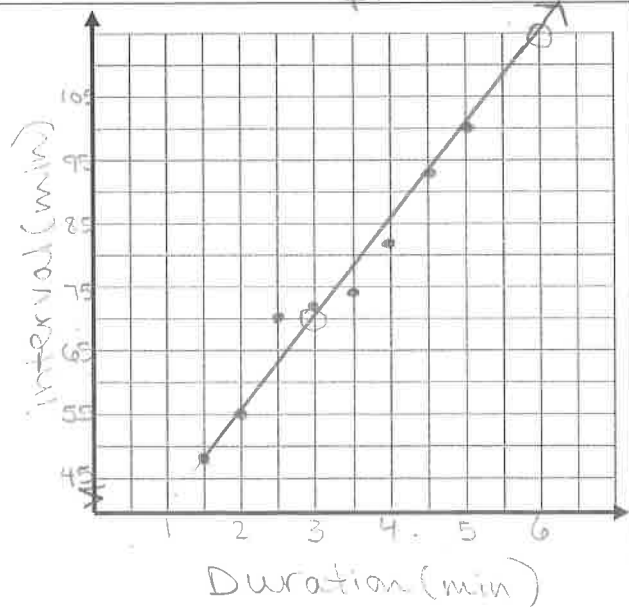
3.



hw 10.



hw 11.



hw 12.

