

Describing Correlation in Scatter Plot Graphs

When describing a relationship, you can assess the correlation (positive, negative, or no-relationship), the strength of the relationship (strong or weak) and whether or not the relationship appears to be linear (makes a straight line) or non-linear. From your course pack page 6, complete the following:

Positive correlation:

When the trend is increasing towards the right.

Negative correlation:

When the trend is decreasing towards the right.

No correlation:

When points are so scattered that no trend is discernable.

Correlations are strong if:

the points nearly follow a line or curve.

Correlations are weak if:

the points are dispersed more widely, but still show a recognizable trend.

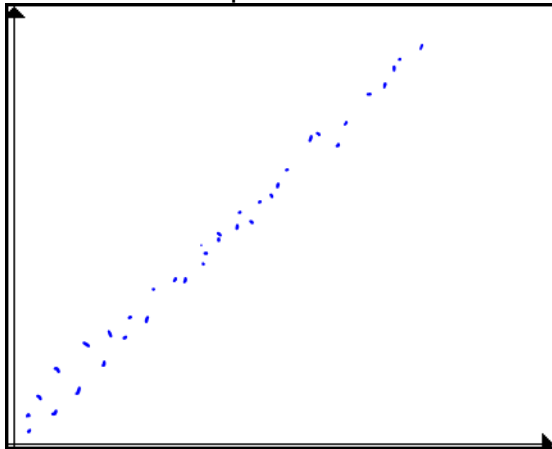
A correlation is linear if:

the points lie along or close to a straight line.

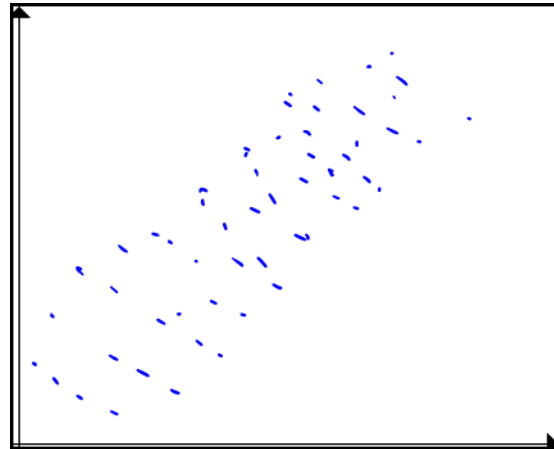
A correlation is non-linear if:

the points lie along or close to a curve.

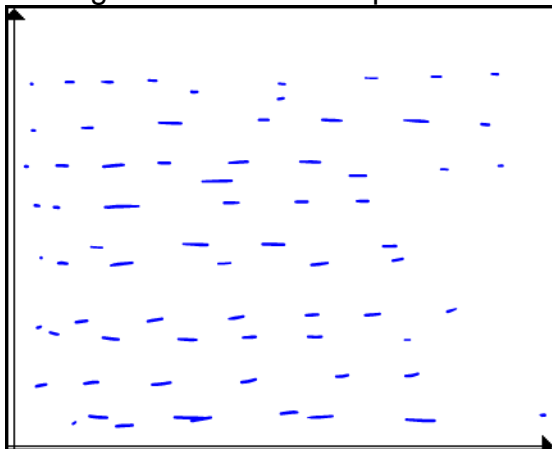
Sketch an example of each:



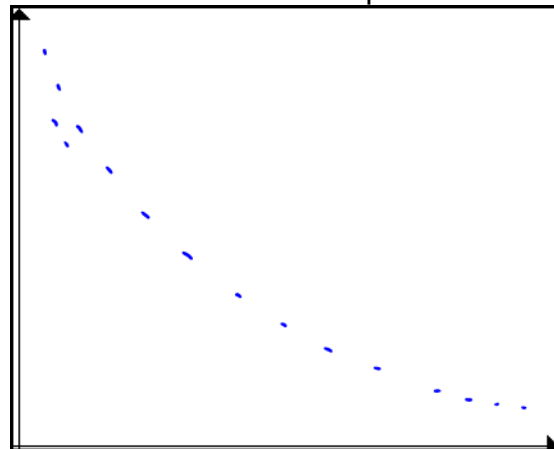
*Strong Linear Relationship



*Weak Linear Relationship



*No relationship



*Non-Linear Relationship

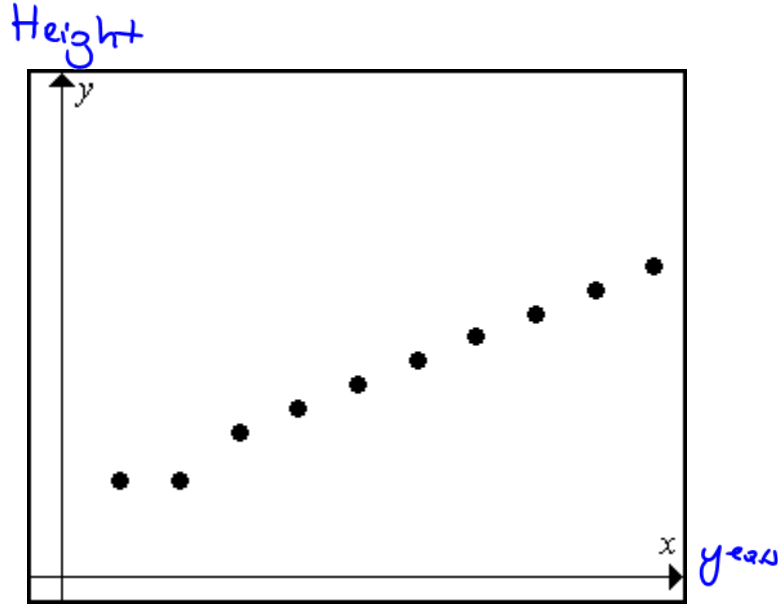
Describing Correlation in Scatter Plot Graphs

Example # 1

This scatter plot shows the height of a tree over several years.

- a) Label the axes.
- b) Complete the following sentence: As the number of years increases, the height of the tree increases.
- c) Describe the correlation.

Strong linear correlation

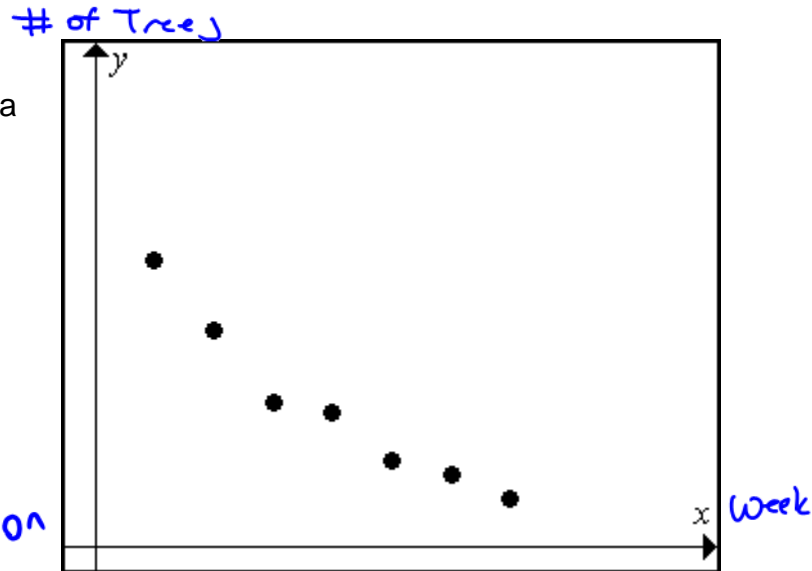


Example #2

This scatter plot shows the number of trees left in a forest as several loggers are cutting them down over a week.

- a) Label the axes.
- b) Complete the following sentence: As the number of days increase, the number of trees left decrease.
- c) Describe the correlation.

Strong non-linear correlation

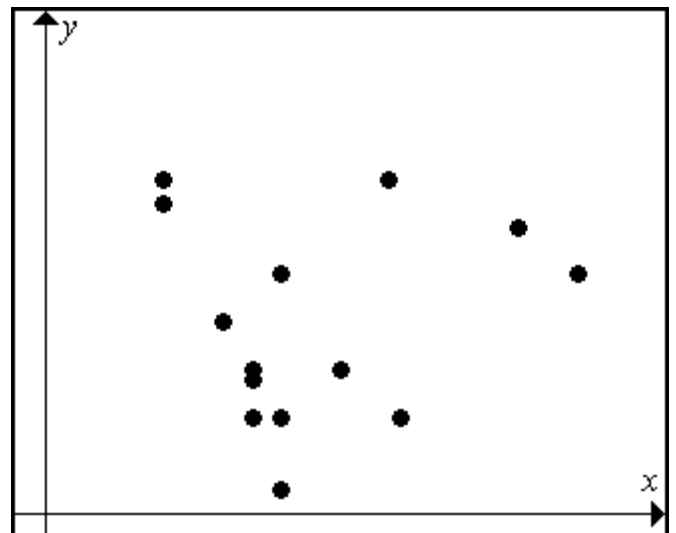


Example 3

This scatter plot shows the number of questions students did for math homework compared to the length of their shoelaces.

- a) Describe the correlation.

No correlation



Correlation

Will each of the following sets of data show a positive correlation, a negative correlation, or no correlation? Give reasons for your answer.

a) the number of pages left to be typed in your essay and the number of pages already typed?

of pages left



negative correlation b/c the more you type, the less pages left to be typed.

b) the size of a student's hand and the number of rings the student owns

no correlation. You can buy as many rings as you like.

c) the outside summer temperature and the number of people swimming

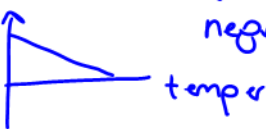
Positive correlation b/c the hotter it is, the more people will be out for swimming.

d) the depth of Lake Ontario and the amount of rainfall and snowfall for that year

Positive correlation b/c if it stops raining and snowing, the water levels of any body of water will fall down.

e) the outside winter temperature and the number of centimeters of ice on Island Lake

'ice



negative correlation b/c as the temp. increases, the ice will melt.

f) the energy left in your personal radio batteries and the number of hours you have listened to this radio

Batteries



Negative correlation b/c as time increases, the energy left will decrease.

g) your take-home pay and the number of hours you work



Positive correlation b/c the more you work, the more you earn.

h) your math mark and the number of hours of studying you do

mark



Positive correlation b/c the more you study, the higher mark you acquire.