

Everyday we make decisions based on the effects of our actions. Our independent actions many times have reactions that are dependent on our choices. In most situations, there exists an independent variable, the value that we can change, and a dependent variable, the value that is determined by the independent variable.

For example, we know that there is a relationship between the number of hours that Sara works at Sea World in July and the amount of money she will earn on her July paycheck.

What depends on what? Does the hours working depend on the money made...or does the money made depend on the hours worked?

In this situation the independent variable, the value that Sara can directly change, is the number of hours she works. The money she earns for working that many hours determines the dependent variable.

Determine the independent and dependent variables for the following variables.

1. The number of dishes that need to be cleaned and the number of people at the party.

Independent _____ Dependent _____

2. The age of a BMW and the value of the car, for the first 10 years.

Independent _____ Dependent _____

3. The amount of Fredericksburg peaches grown and the price of peaches.

Independent _____ Dependent _____

4. The amount of food in a well-stocked refrigerator and the number of people who can eat an afternoon snack.

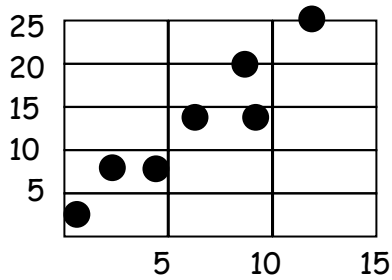
Independent _____ Dependent _____

5. The height of a tree and the number of years since it was planted.

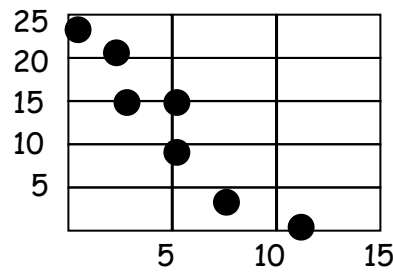
Independent _____ Dependent _____

One way to represent a set of related data is to graph the data using a **scatterplot**. In a scatterplot each pair of corresponding values in the data set is represented by a point on a graph. To make predictions using a scatterplot, look for a correlation, or pattern, in the data.

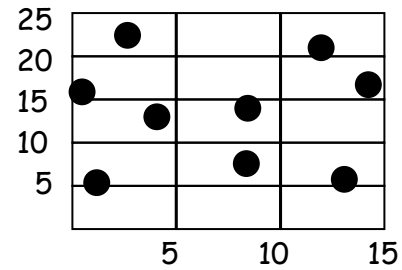
Positive Correlation



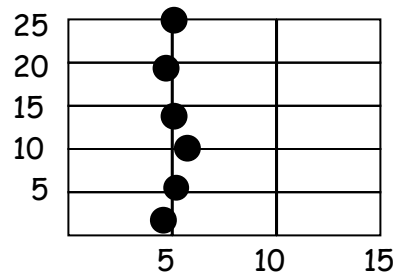
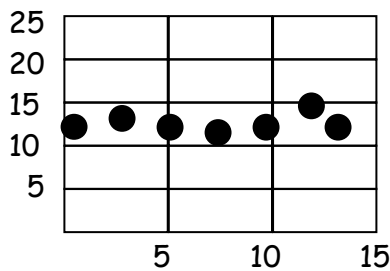
Negative Correlation



No Correlation

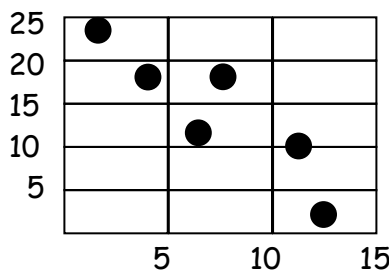
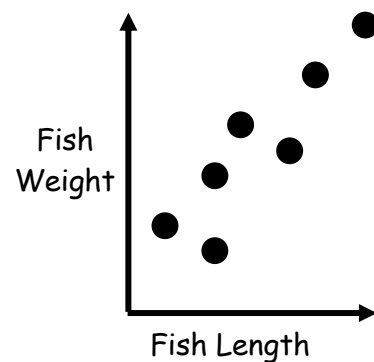


Undefined Correlation (Shows a vertical or horizontal pattern)



Example: Joe is a fisherman. He weighs each fish he catches, and measures its length. He graphed his data in a scatterplot.

As the lengths of the fish _____, their weights generally _____. This is a _____ correlation.



Statisticians try to draw a line of best fit, a line having approximately the same number of points above and below it. Draw a **line of best fit** in the graph to the left.