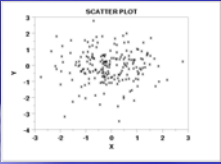
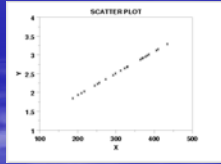


### Do Now

Identify the type of correlation that would describe each scatter plot.

1. 

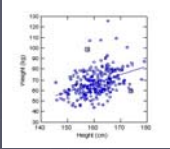
2. 

### Types of Correlation

- Strong or Weak
- Positive or Negative
- None or No Correlation
- Give an example of each.

### Correlation Coefficient

♦ A *correlation coefficient* (also the *Pearson correlation coefficient*, after Karl Pearson) is a summary of the strength of the linear association between the variables. If the variables tend to go up and down together, the correlation coefficient will be positive. If the variables tend to go up and down in opposition with [the] low values of one variable associated with high values of the other, the correlation coefficient will be negative.



♦ "Tends to" means the association holds "on average", not for any arbitrary pair of observations, as the following scatterplot of weight against height for a sample of older women shows. The correlation coefficient is positive and height and weight tend to go up and down together. Yet, it is easy to find pairs of people where the taller individual weighs less, as the points in the two boxes illustrate.

Correlations tend to be positive. Pick any two variables at random and they will almost certainly be positively correlated, if they're correlated at all—height and weight; saturated fat in the diet and cholesterol levels; amount of fertilizer and crop yield; education and income. Negative correlations tend to be rare—automobile weight and fuel economy; folate intake and homocysteine; number of cigarettes smoked and child's birth weight.

Obtained October 11, 2005 from <http://www.tufts.edu/~gdallal/corr.htm>

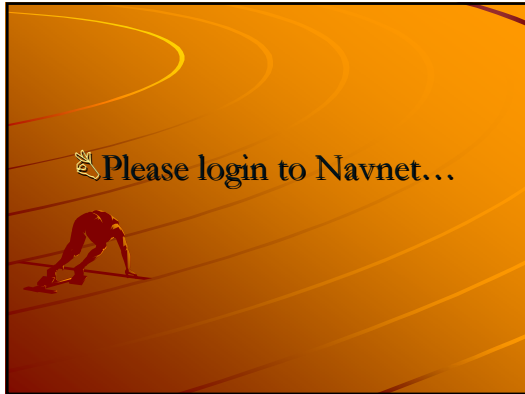
Two other terms that commonly refer to the comparison or correlation of data are direct and inverse proportions.

### Neat Websites to Peruse

- <http://noppa5.pc.helsinki.fi/koe/flash/corr/ch16.html>
- <http://argyll.epsb.ca/jreed/math9/strand4/4103.htm>
- <http://noppa5.pc.helsinki.fi/koe/corr/cor7a/cor7a.html>

### Pertinent Values of $r$

- Strong—.80 to 1.00 ( $.8 \leq r \leq 1$ )
- Weak—.50 to .80 ( $.5 \leq r < .8$ )
- No Correlation—0 to .50 ( $0 \leq r < .5$ )



### How Many???

- Once you have logged in, go to the 'Activity Center.'
- You will have one (1) point to plot on the displayed graph.
- Plot an ordered pair on the graph with  $x$  representing the number of apples that you eat each year and  $y$  representing the number of oranges. Please approximate your answer...
- Please note the scale of 0 to 100 on each axis.

