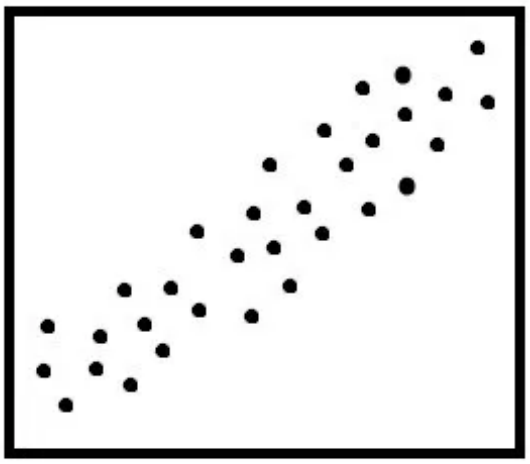
Reading Scatter Plots

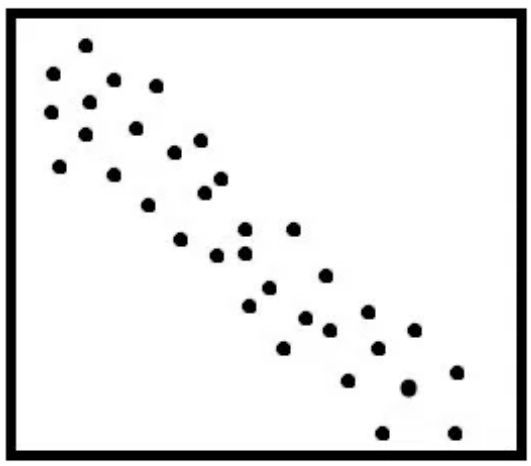
Scatter Plots are used to understand the relationship or association between two variables. Questions like “When the temperature increases, do gas prices also increase?” or “How are changes in the price of gas related to the number of miles people drive each month?” can be answered by studying the pattern in a Scatter Plot.

Shape

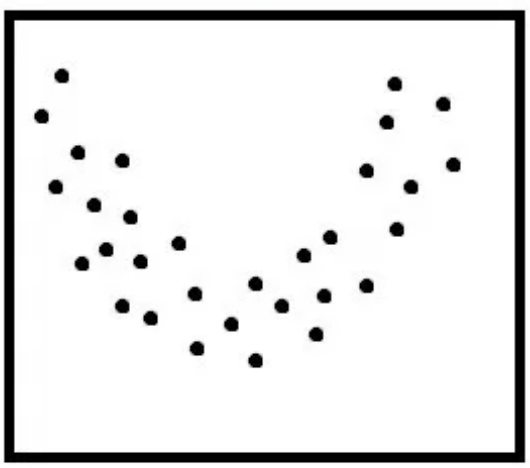
In general, you can categorize the shape in a Scatter Plot as either **linear** or **curvilinear**. Scatter Plots with a **linear shape** have points that seem to generally fall along a line (hence, the term linear), whereas Scatter Plots with a **curvilinear shape** have points that seem to form a curve. We use the shape to describe whether the variables are linearly related or curvilinearly related. If there is no clear shape, most likely the variables are not related.



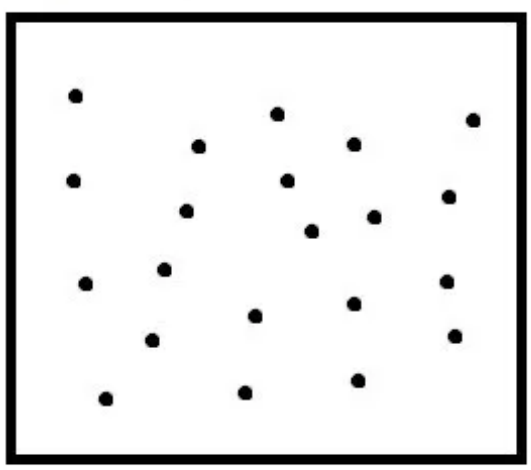
positive linear association



negative linear association



curvilnear association



no association

As you can see from the Scatter Plots on the previous page, linear patterns can be thought of as either positive or negative. In a positive pattern, the imaginary line slopes up from left-to-right. In a negative pattern, the imaginary line slopes down, from left-to-right.

Strength

The strength of the relationship or association between two variables is shown by how closely clustered together the points are to each other. This is true whether the pattern is linear, curvilinear, positive, or negative.

It can be somewhat subjective to compare the strength of one association to another looking at only their Scatter Plots. For more accuracy, it's best to calculate a correlation coefficient to better understand the strength of association.