- In normal distributions, about two-thirds of the scores lie within a distance of one standard deviation of the mean; 95% lie within two standard deviations of the mean; and 99.7% lie within 3 standard deviations.

We refer to modality as the number of modes a distribution has. Put it this way, if the histogram of the set of scores has "one hump," it is said to be unimodal. If it has two humps, then it's bimodal. Skewness refers to the asymmetry of a histogram. If the histogram is perfectly symmetrical around its middle, the it has no skewness. If, on the other hand, the histogram has a hump toward the left and the right-hand tail stretches out longer than the left-hand tail, then the distribution is positively skewed. If the hump is to the right and the left-tail is elongated, the distribution is negatively skewed. Do note that there is a relationship among the mean, the median and skewness - the mean is drawn in the direction of the skew more than is the median, that in a very positively skewed distribution, the mean will be higher than the median, and vice versa.

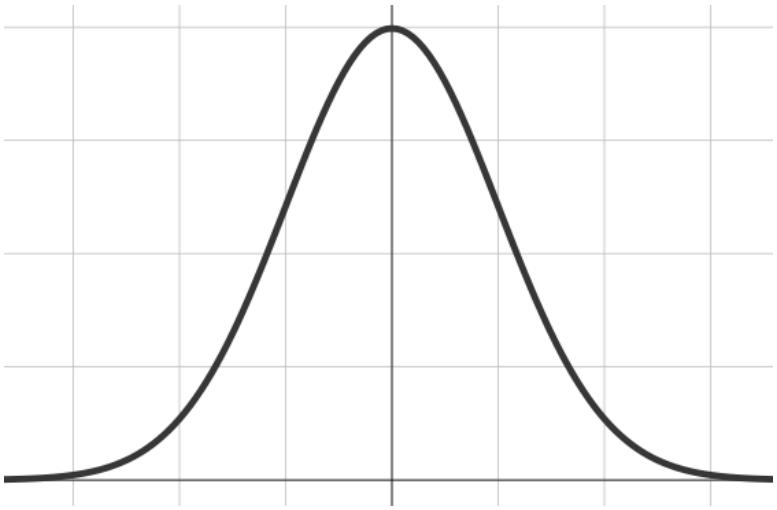
Normal Distribution

Concerning the graph:

- There is a single central peak at the mean (which is the average) of the data.

- The shape of the curve is always bell-shaped - the graph is falling off evenly on the sides.

- Its spread is controlled by the standard deviation.



All curves of normal distributions have the same shape but there can be different means and different standard deviations. However, once one specifies the mean and standard deviation of a normal distribution, everything else is fixed. Also keep in mind about the following "facts':

- 50% of the area lies below the middle (the mean).
- 34% of the area lies between the mean and a point one standard deviation above.
- 16% of the data in a normal distribution lies below a point one standard deviation below the mean.

The standard normal distribution is a normal distribution that has a mean of zero and a standard deviation of 1. This standard normal distribution is always centered at zero. For a standard normal distribution, 68% of the observations stay within 1 standard deviation of the mean while 95% stay within 2 standard deviations of the mean. Finally, 99.9% stay within 3 standard deviations of the mean.

