# Z- Scores

A z-score (also called a *standard score*) gives you an idea of how far from the mean a data point is. But more technically it's a measure of how many standard deviations below or above the population mean a raw score is by converting the mean to zero.

$$Z = \frac{x - \mu}{\sigma}$$

μ – is the mean
σ – standard deviation

The z-score changes the mean to zero.

Example: Let's say you have a test score of 190. The test has a mean ($\mu$) of 150 and a <u>standard deviation</u> ($\sigma$) of 25. Assuming a <u>normal distribution</u>, your z score would be:

$$Z = \frac{x - \mu}{\sigma}$$

$$= \frac{190 - 150}{25}$$

$$= \frac{40}{25} = 1.6$$

That is 1.6 standard deviations above the mean using Bell Curve

Since z-scores are standardized, we can look up 1.6 on a chart to find a percentile rank