Chapter:6

The Standard Deviation as a s Ruler and the Normal Model

The Standard Deviation as a ruler
Ask: How far this value from the Mean?

The number of standard deviations a raw score (individual score) deviates from the mean

$$Z = \frac{(y - \bar{y})}{s}$$

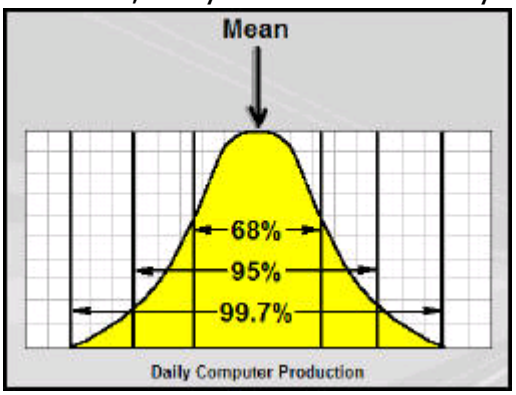
Z= standardized score for a value of y
= number of standard deviations a raw score (y-score) deviates from the mean
y= an interval/ratio variable

$\bar{y}$= the mean of y
s= the standard deviation of Y

Jason: $Z \frac{900-1000}{100} = -1$

Mary: $Z = \frac{26-22}{2} = 2$

From these findings, we gather that Jason's score is 1 standard deviation below the mean SAT score and Mary's score is 2 standard deviations above the mean ACT score. Therefore, Mary's score is relatively better.



Normal Model

50% of the scores fall above the mean and 50% fall below.
Approximately 68% of the scores fall within plus and minus 1 Z-score from the mean.
Approximately 95% of the scores fall within plus and minus 2 Z-scores from the mean.
99.7% of the scores fall within plus and minus 3 Z-scores from the mean.

Shitting Data
When you add data or subtract to all constant of each value all the measures of position like center, percentiles, min, max will increase or decrease by the spread does not change

Multiplying or dividing each value by contents changes measurement of units. When are multiply (or divide) all the data values by any constants, all measures of position (such as the mean, median and percentiles) and measures of spread (such as the range, the IQR, and the standard deviation) are multiplied (or divide0 by that same constant