Z-Score z-score is a standardized value that lets you compare raw data values between two different data bases. It lets you compare apples and oranges by converting raw scores to standardized scores relative to population Mean.

$$Zscore = \frac{x_i - \bar{X}}{s_x}$$

For example if two people took different exams and wanted to compare their test scores, they could use Zscore to get a true comparison.

John got an 86 on test A, and Jane got an 82 on test B.

Test A: $\bar{X} = 79,\ S_x = 3.8$ Test B: $\bar{X} = 77,\ S_x = 2.5$

$Z_{John} = 1.82$ $Z_{Jane} = 2.0$

In this example, John has a higher raw score (86), but Jane (82) actually did relatively better on test B than John did on test A. The higher Z-score indicates that Jane is further above the Mean than John.

Percentile Is a way of ranking data points positionally within a data set. Some data sets are fairly small while others are quite large, but the method of ranking is the same. An 80 Percentile means that 80% of the data elements are below that point.

1) Organize data sequentially.
2) Let "n" be the number of data elements.
3) To determine the Percentile ranking of a data point, determine its positional number (*i*).

$$Percentile\ (P) = \frac{i}{n}$$

Data {3.4, 3.8, 4.3, 4.7, 8.2, 8.3, 9.5} x_5=8.2 $P(8.2) = \frac{5}{7}$ = 71.4%

4) To find the score (i) that represents a specific Percentile: Find the 65th percentile.
5) $.65 = \frac{i}{n}\ \equiv> i = .65(7) = 4.55 = 5$ *always <u>round up</u> to a whole number.
6) Find the data value in that position: 65th Percentile = 8.2
7) Note: if i=(%)(n) results in a whole number, then average between x_i and x_{i+1}
8) $x = \frac{(x_i + x_{i+1})}{2}$ ie: i=5, $x = \frac{(x_5 + x_6)}{2} = \frac{(8.2+8.3)}{2} = 8.25$