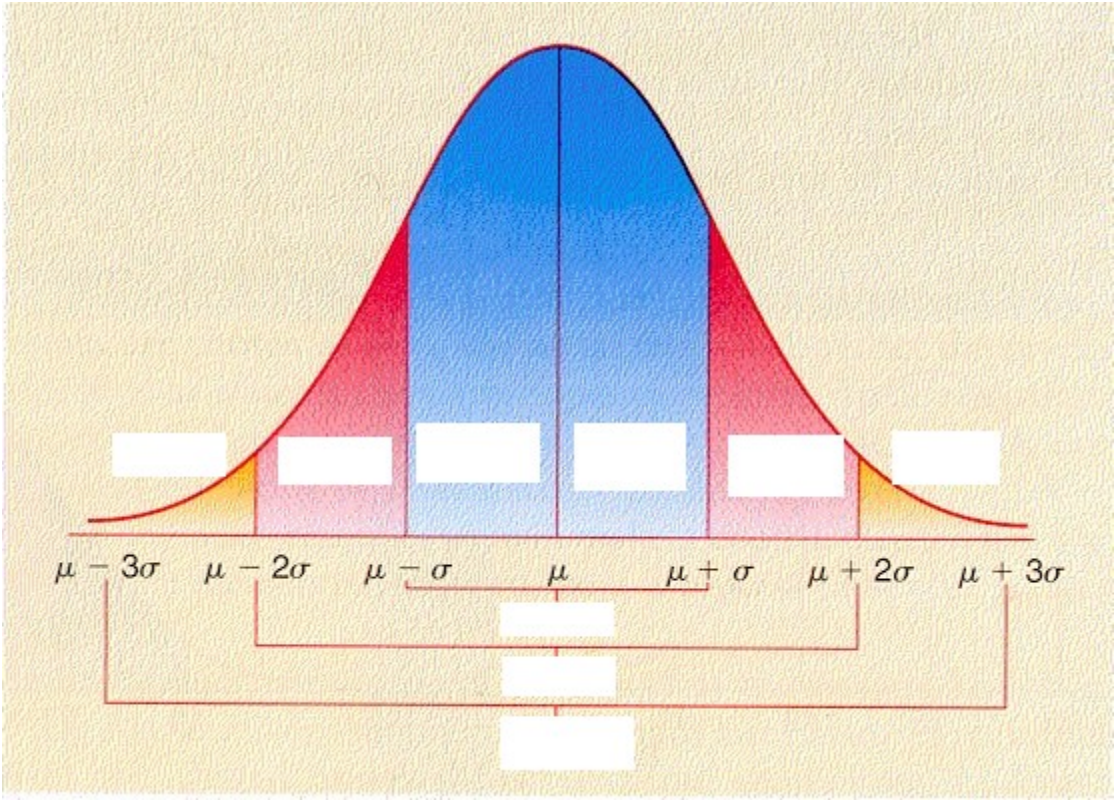
8.2 Z-scores

Z-scores are a useful method of calculating how likely a data point is among a set set of data that is relatively "normal". We need the mean, standard deviation, and a z-score chart to calculate the likelihood.

Mean: _____(symbol) **Standard Deviation: _____(symbol)**



Z-Scores: The number of standard deviations from the mean is called the *z-score* and can be found by the formula:

"raw" data Mean - "mu"

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

St. Dev.

Example 1 Find the z-score corresponding to an IQ score of 132. IQ scores have a normal distribution with mean 100 and standard deviation 15.

Example 2 Heights of young women are normally distributed with a mean (μ) 65.5 in and standard deviation (σ) 2.5 in.

a) What is the probability that a woman, chosen at random, is below 62 in?

b) What is the probability that a woman, chosen at random, is above 68 in?

c) What is the probability that a woman, chosen at random, is between 60 and 72 in?

d) How tall does a woman have to be to be taller than 90% of women?