Chapter 3 Formula Sheet

\[ Q(p) = Q\left(\frac{i - 0.5}{n}\right) = x_i \text{ for } n \text{ data points } x_1 \leq x_2 \leq \cdots \leq x_n \]

\[ i = np + .5 \text{ to find the index } i \text{ of } Q(p) \text{ in } n \text{ ordered data points} \]

\[ IQR = Q(.75) - Q(.25) \]

Plot points \((x_i, Q(\frac{i - 0.5}{n}))\) to make a probability plot (for ordered \(x_i\))

\[ \bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i \text{ and } \mu = \frac{1}{N} \sum_{i=1}^{N} x_i \]

\[ R = x_n - x_1 \text{ in } n \text{ ordered data points} \]

\[ s^2 = \frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2 \text{ and } \sigma^2 = \frac{1}{N} \sum_{i=1}^{N} (x_i - \mu)^2 \]

\[ \hat{p} = \frac{\text{The number of items in the sample with the characteristic}}{n} \]

\[ \hat{u} = \frac{\text{The total number of occurrences}}{\text{The total number of inspection units or sampled items}} \]