Equation Sheet #1 - Chapters 2 & 3

$$\text{number of classes} = 1 + 3.322 \log_{10}(n) \quad \text{or} = 1 + 1.443 \ln_e(n)$$

$$i = \frac{p}{100} n$$

If ***i*** is <u>not</u> an integer: The next integer greater than ***i*** denotes the position of the pth percentile.
If ***i*** is an integer: The pth percentile is the average of the values in positions i and i+1.

$$IQR = P_{75} - P_{25}$$

$\mu = \frac{\sum x_i}{N}$	$\bar{x} = \frac{\sum x_i}{n}$
$\sigma^2 = \frac{N\sum {x_i}^2 - \left(\sum x_i\right)^2}{N^2}$	$s^2 = \frac{n\sum {x_i}^2 - \left(\sum x_i\right)^2}{n(n-1)}$
$\sigma = \sqrt{\sigma^2}$	$s = \sqrt{s^2}$
$cv = \frac{\sigma}{\mu}$	$cv = \frac{s}{\bar{x}}$
$\mu = \frac{\sum f_i M_i}{N}, \quad N = \sum f_i$	$\bar{x} = \frac{\sum f_i M_i}{n}, \quad n = \sum f_i$
$\sigma^2 = \frac{N\sum f_i {M_i}^2 - \left(\sum f_i M_i\right)^2}{N^2}$	$s^2 = \frac{n\sum f_i {M_i}^2 - \left(\sum f_i M_i\right)^2}{n(n-1)}$
$\sigma_{xy} = \frac{N\sum x_i y_i - \sum x_i \sum y_i}{N^2}$	$s_{xy} = \frac{n\sum x_i y_i - \sum x_i \sum y_i}{n(n-1)}$
$\rho_{xy} = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$	$r_{xy} = \frac{s_{xy}}{s_x s_y}$

$$z = \frac{(x_i - \bar{x})}{s}$$

$$\textit{Chebyshev Theorem} \quad 1 - \frac{1}{z^2}$$