Statistical Formulae

$$sum(X) = \sum_{i=1}^{n} X_i = X_1 + X_2 + \cdots + X_n$$ n is number of observations

$$\overline{X} = mean(X) = \frac{sum(X)}{n}$$

$$\overline{X} = mean(X) = \frac{\sum w_i X_i}{\sum w_i}$$ mean with weights w_i for each observation

$$Geometric\,Mean(X) = \text{antilog}\frac{1}{n}\sum \log X$$

deviation from the mean $dev(X) = X - \overline{X}$ $SS(X) = \sum (dev(X))^2$

variance: $var(X) = \frac{1}{n-1}\sum (dev(X))^2$ $var(X) = MS(X) = s^2$

standard deviation $s = stdev(X) = \sqrt{var(X)}$

coefficient of variation $cv(X) = \frac{100 stdev(X)}{mean(X)}$

$$t = \frac{(\overline{X}_A - \overline{X}_B) - (\mu_A - \mu_B)}{\sqrt{\frac{1}{n}(s_A^2 + s_B^2)}}$$ n same for samples A and B

$$t = \frac{(\overline{X}_A - \overline{X}_B) - (\mu_A - \mu_B)}{\sqrt{\left(\frac{(n_A - 1)s_A^2 + (n_B - 1)s_B^2}{n_A + n_B - 2}\right)\left(\frac{n_A + n_B}{n_A n_B}\right)}}$$ n not same for samples A and B

$$F = \frac{s_A^2}{s_B^2} = \frac{var(X_A)}{var(X_B)} = \frac{MS(X_A)}{MS(X_B)}$$