Statistical Formulae:

Let X ~ $f_X(x)$ which is a well defined probability mass function (if X is discrete) or probability density function (if X is continuous) $f_X : \mathbb{R} \longrightarrow \mathbb{R}$ and assume μ_X exists and σ_X^2 where $\sigma_X \neq 0$

Let $X_1, X_2, \ldots, X_n$ be independent identically distributed (i. i. d.) random variables

$Z_{x_i} = \dfrac{X_i - \mu_X}{\sigma_X}$ when μ_X and σ_X^2 exist and are known

$Z_{x_i} = \dfrac{X_i - \overline{X}}{\sigma_X}$ when σ_X^2 exists and is known

$T = \dfrac{X_i - \overline{X}}{S_X}$ when μ_X and σ_X^2 exist and aren't known

$$\hat{\mu} = \frac{\sum_{k=1}^{n} X_k}{n}$$

$$\overline{X} = \frac{\sum_{k=1}^{n} X_k}{n}$$

$$s_X^2 = \frac{\sum_{k=1}^{n} (X_k - \overline{X})^2}{n-1}$$

$$r_{XY} = \frac{\sum_{k=1}^{n} (X_k - \overline{X})(Y_k - \overline{Y})}{\sqrt{\sum_{k=1}^{n} (X_k - \overline{X})^2 \sum_{k=1}^{n} (Y_k - \overline{Y})^2}} = \frac{\sum_{k=1}^{n} (X_k - \overline{X})(Y_k - \overline{Y})}{n\sqrt{(s_x)(s_y)}} = \frac{\sum_{k=1}^{n} (Z_{X_k})(Z_{Y_k})}{n}$$

$$T_{ind} = \frac{(\overline{X}_1 - \overline{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\left(\frac{\sum_{k=1}^{n} (X_k - \overline{X})^2 + \sum_{k=1}^{n} (Y_k - \overline{Y})^2}{n_1 + n_2 - 2}\right) \cdot \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

$$\chi^2 = \sum_{x} \frac{(f_o - f_e)^2}{f_e} = \sum_{k=1}^{n_r} \left(\sum_{j=1}^{n_c} \frac{(f_{o_{jk}} - f_{e_{jk}})^2}{f_{e_{jk}}} \right)$$