

# Formulae for 2244

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

$$\sigma = \sqrt{\frac{\sum (x - \mu)^2}{N}}$$

$$P(x) = \frac{n!}{(n - x)! x!} p^x q^{n - x}$$

$$\mu = np$$

$$\sigma^2 = npq$$

$$z = \frac{value - mean}{SD}$$

$$E = t \frac{s}{\sqrt{n}}$$

$$E = z \sqrt{\frac{\hat{p}\hat{q}}{n}}$$

$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}}$$

$$t = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$$

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$z = \frac{(\hat{p}_1 - \hat{p}_2) - (p_1 - p_2)}{\sqrt{\frac{\bar{p}\bar{q}}{n_1} + \frac{\bar{p}\bar{q}}{n_2}}}$$

$$\bar{p} = \frac{x_1 + x_2}{n_1 + n_2}$$

$$E = t \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

$$E = z \sqrt{\frac{\hat{p}_1 \hat{q}_1}{n_1} + \frac{\hat{p}_2 \hat{q}_2}{n_2}}$$

$$r = \frac{\sum \left( \frac{(x - \bar{x})}{s_x} \times \frac{(y - \bar{y})}{s_y} \right)}{n - 1}$$

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$

$$a = \bar{y} - b\bar{x}$$

$$t = \frac{b - \beta_0}{s_e / \sqrt{\sum (x - \bar{x})^2}}$$

$$s_e = \sqrt{\frac{\sum (y - \hat{y})^2}{n - 2}}$$

$$Y = \alpha + \beta x + \varepsilon$$

$$\frac{\sum n_i (\bar{y}_i - \bar{\bar{y}})^2}{k - 1}$$

$$\frac{\sum_{j=1}^k \sum_{i=1}^{n_j} (y_i - \bar{y}_j)^2}{N - k}$$

$$\frac{\sum (y_i - \bar{\bar{y}})^2}{N - 1}$$

$$Y = \mu + \alpha_i + \varepsilon$$