BASIC FORMULAE: BINOMIAL:

$$\bar{x} = \frac{\sum x}{n} \qquad s = \sqrt{\frac{\sum x^2 - \frac{\left(\sum x\right)^2}{n}}{n-1}} \qquad \mu = n \cdot p$$

$$E(x) = \mu = \sum x \cdot P(x) \qquad \sigma = \sqrt{\sum x^2 \cdot P(x) - \mu^2} \qquad \sigma = \sqrt{n \cdot p \cdot q}$$

$$z = \frac{x-\mu}{\sigma} \qquad z = \frac{\bar{x}-\mu}{\sigma/\sqrt{n}} \qquad z = \frac{\hat{p}-p}{\sqrt{\frac{p\,q}{n}}} \qquad \hat{p} = \frac{x}{n}$$

CONFIDENCE INTERVALS:

$$\bar{x} \pm z_{\alpha/2}\frac{\sigma}{\sqrt{n}} \qquad \bar{x} \pm t_{\alpha/2}\frac{s}{\sqrt{n}}, \quad d.f. = n-1$$

SAMPLE SIZE:

$$\hat{p} \pm z_{\alpha/2}\sqrt{\frac{\hat{p}\,\hat{q}}{n}}, \quad \hat{p} = \frac{x}{n}, \quad \hat{q} = 1-\hat{p} \qquad n = \frac{z_{\alpha/2}{}^2\,\sigma^2}{E^2} \qquad n = \hat{p}\,\hat{q}\left(\frac{z_{\alpha/2}}{E}\right)^2$$

TEST STATISTICS:

$$z = \frac{\bar{x}-\mu_0}{\sigma/\sqrt{n}} \qquad t = \frac{\bar{x}-\mu_0}{s/\sqrt{n}} \quad d.f. = n-1 \qquad z = \frac{\hat{p}-p_0}{\sqrt{\frac{p_0 q_0}{n}}}, \quad \hat{p} = \frac{x}{n}$$

$$t = \frac{\left(\bar{x}_1 - \bar{x}_2\right)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \qquad t = \frac{\left(\bar{x}_1 - \bar{x}_2\right)}{\sqrt{\left(\frac{s_1^2(n_1-1) + s_2^2(n_2-1)}{n_1+n_2-2}\right)\cdot\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$d.f. = \min(n_1-1, n_2-1) \qquad d.f. = n_1 + n_2 - 2$$

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\bar{p}\,\bar{q}\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}, \quad \bar{p} = \frac{x_1+x_2}{n_1+n_2}, \quad \bar{q} = 1-\bar{p} \qquad \chi^2 = \sum\frac{\left(O-E\right)^2}{E}, \quad E = \frac{r\cdot c}{n}, \quad d.f. = (r-1)\cdot(c-1)$$