Chapter 8 Formula Sheet

In two-way factorials:

$$y_{ijk} = \mu_{ij} + \epsilon_{ijk} = \mu_{..} + \alpha_i + \beta_j + \alpha\beta_{ij} + \epsilon_{ijk}$$

$$\hat{L} \pm t s_{\mathrm{P}} \sqrt{\sum_{i,j} \frac{c_{ij}^2}{n_{ij}}} \quad \text{where} \sum_{i,j} \frac{c_{ij}^2}{n_{ij}} \quad \text{comes from Table 8.3 or 8.4}$$

$$\bar{y}_{i.} - \bar{y}_{i'.} \pm \frac{q^*}{\sqrt{2}} s_{\mathrm{P}} \frac{1}{J} \sqrt{\sum_j \frac{1}{n_{ij}} + \sum_j \frac{1}{n_{i'j}}} \quad \text{or} \quad \bar{y}_{i.} - \bar{y}_{i'.} \pm \frac{q^* s_{\mathrm{P}}}{\sqrt{Jm}}$$

$$\bar{y}_{.j} - \bar{y}_{.j'} \pm \frac{q^*}{\sqrt{2}} s_{\mathrm{P}} \frac{1}{I} \sqrt{\sum_i \frac{1}{n_{ij}} + \sum_i \frac{1}{n_{ij'}}} \quad \text{or} \quad \bar{y}_{.j} - \bar{y}_{.j'} \pm \frac{q^* s_{\mathrm{P}}}{\sqrt{Im}}$$

In 2^p factorials:

$$\hat{E} \pm t s_{\mathrm{P}} \frac{1}{2^p} \sqrt{\frac{1}{n_{(1)}} + \frac{1}{n_{\mathrm{a}}} + \frac{1}{n_{\mathrm{b}}} + \frac{1}{n_{\mathrm{ab}}} + \cdots} \quad \text{or} \quad \hat{E} \pm t \frac{s_{\mathrm{P}}}{\sqrt{m2^p}}$$

$$s_{\mathrm{FE}}^2 = \frac{1}{m2^p - u} \sum (y - \hat{y})^2 = \frac{1}{m2^p - u} \left[SSTot - m2^p \sum \hat{E}^2 \right]$$

$$\hat{y} \pm t s_{\mathrm{FE}} \sqrt{\frac{u}{m2^p}}$$

$$\hat{E} \pm t \frac{s_{\mathrm{FE}}}{\sqrt{m2^p}}$$

$$Q(p) = Q_z \left(\frac{1+p}{2} \right) \quad \text{(from Exercise 9)}$$