

## FORMULA SHEET – CHAPTERS 7 & 8

### CONFIDENCE INTERVALS:

z confidence interval for means:

$$\bar{X} - z_{\alpha/2} \left( \frac{\sigma}{\sqrt{n}} \right) < \mu < \bar{X} + z_{\alpha/2} \left( \frac{\sigma}{\sqrt{n}} \right)$$

t confidence interval for means:

$$\bar{X} - t_{\alpha/2} \left( \frac{s}{\sqrt{n}} \right) < \mu < \bar{X} + t_{\alpha/2} \left( \frac{s}{\sqrt{n}} \right)$$

Confidence interval for a proportion:

$$\hat{p} - z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}} < p < \hat{p} + z_{\alpha/2} \sqrt{\frac{\hat{p}\hat{q}}{n}}$$

Minimum Sample Size for Means:

$$n = \left( \frac{z_{\alpha/2} \cdot \sigma}{E} \right)^2$$

Minimum Sample Size for Proportions:

$$n = \hat{p}\hat{q} \left( \frac{z_{\alpha/2}}{E} \right)^2$$

### TEST VALUES:

z test for the mean:  $z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$

t test for the mean:  $t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$

z test for the proportion:  $z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$