

Exam Formulas Sheet

QUA 207 Fall 2018

Standard Error of the Mean

$$\sigma_{\bar{X}} = \frac{\sigma}{\sqrt{n}} \quad (7.3)$$

Standard Error of the Proportion

$$\sigma_p = \sqrt{\frac{\pi(1-\pi)}{n}} \quad (7.7)$$

Confidence Interval for the Mean (σ Known)

$$\bar{X} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$$

or

$$\bar{X} - Z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \leq \mu \leq \bar{X} + Z_{\alpha/2} \frac{\sigma}{\sqrt{n}} \quad (8.1)$$

Confidence Interval Estimate for the Proportion

$$p \pm Z_{\alpha/2} \sqrt{\frac{p(1-p)}{n}}$$

or

$$p - Z_{\alpha/2} \sqrt{\frac{p(1-p)}{n}} \leq \pi \leq p + Z_{\alpha/2} \sqrt{\frac{p(1-p)}{n}} \quad (8.3)$$

Sample Size Determination for the Proportion

$$n = \frac{Z_{\alpha/2}^2 \pi(1-\pi)}{e^2} \quad (8.5)$$

t Test for the Mean (σ Unknown)

$$t_{STAT} = \frac{\bar{X} - \mu}{\frac{S}{\sqrt{n}}} \quad (9.2)$$

Z Test for the Proportion in Terms of the Number of Events of Interest

$$Z_{STAT} = \frac{X - n\pi}{\sqrt{n\pi(1-\pi)}} \quad (9.4)$$

Finding Z for the Sampling Distribution of the Mean

$$Z = \frac{\bar{X} - \mu_{\bar{X}}}{\sigma_{\bar{X}}} = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}} \quad (7.4)$$

Finding Z for the Sampling Distribution of the Proportion

$$Z = \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}} \quad (7.8)$$

Confidence Interval for the Mean (σ Unknown)

$$\bar{X} \pm t_{\alpha/2} \frac{S}{\sqrt{n}}$$

or

$$\bar{X} - t_{\alpha/2} \frac{S}{\sqrt{n}} \leq \mu \leq \bar{X} + t_{\alpha/2} \frac{S}{\sqrt{n}} \quad (8.2)$$

Sample Size Determination for the Mean

$$n = \frac{Z_{\alpha/2}^2 \sigma^2}{e^2} \quad (8.4)$$

Z Test for the Mean (σ Known)

$$Z_{STAT} = \frac{\bar{X} - \mu}{\frac{\sigma}{\sqrt{n}}} \quad (9.1)$$

Z Test for the Proportion

$$Z_{STAT} = \frac{p - \pi}{\sqrt{\frac{\pi(1-\pi)}{n}}} \quad (9.3)$$