

Formulas Sheet

Standardized Normal Data

$$z = \frac{x - \mu}{\sigma} \text{ or } \frac{\text{location} - \text{middle}}{\text{std. dev.}}$$

Addition and Multiplication Rules for Probability

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A) \cdot P(B)^*$$

(*only if A and B are independent)

Standard Deviations for Sampling Distributions

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{N}}$$

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{N}}$$

Confidence Interval for a Population Proportion

$$\hat{p} \pm z^* \sqrt{\frac{\hat{p}(1-\hat{p})}{N}}$$

where the critical z -value comes from this table:

| | | | | |
|------------------|-------|------|-------|-------|
| Confidence level | 90% | 95% | 99% | 99.9% |
| z^* | 1.645 | 1.96 | 2.576 | 3.291 |