

Basic Formulas you need to know for Exam 1. They will not be given to you:

SD and Short-cut SD formulas

$$Z = \frac{\text{Value} - \text{Avg}}{\text{SD}}$$

Probability Rules- multiplication and addition rules (including special cases of “at least one” and “not all)

EV and SE for sums, averages and percents for n draws from a box (p. 14 of Study Guide)

$$Z = \frac{\text{Value} - \text{EV}}{\text{SE}}$$

Confidence Intervals using Z and t curves

Significance tests: 1 sample Z and t tests.

$$Z = \frac{\text{Obs} - \text{Exp}}{\text{SE}} \quad t = \frac{\text{Obs} - \text{Exp}}{\text{SE}^+} \quad \text{where}$$

$$\text{SE}^+ = \frac{\text{SD}^+}{\sqrt{n}} \quad \text{or you can use } \frac{\text{SD}}{\sqrt{n-1}} \text{ if you prefer, they're the same thing. } \quad \text{SD}^+ = \sqrt{\frac{n}{n-1}} \times \text{SD}$$

Significance tests: 2 sample Z and t tests.

$$Z = \frac{\text{Obs difference} - \text{Exp difference}}{\text{SE}_{\text{difference}}} \quad t = \frac{\text{Obs difference} - \text{Exp difference}}{\text{SE}_{\text{difference}}^+} \quad \text{where}$$

$$\text{SE}_{\text{difference}} = \sqrt{\text{SE}_A^2 + \text{SE}_B^2} \quad \text{and } \text{SE}_{\text{difference}}^+ = \sqrt{\text{SE}_A^{+2} + \text{SE}_B^{+2}}$$

Degrees of freedom for t, and Chi Square tests

1 sample t test: n-1,

2 sample t-test: n-1 where n is the sample size of the smaller sample

χ^2 goodness of fit test: # of categories -1

χ^2 Independence test: (# of categories in Variable1 -1) x (# of categories in Variable2 -1)

Here's the only formula that will be given to you on Exam 1:

$$\chi^2 = \sum \frac{(\text{Obs} - \text{Exp})^2}{\text{Exp}}$$

Know how to use it for both types of χ^2 tests.