SUMMARY OF HYPOTHESIS TESTS

Statistics students must learn several different hypothesis tests. The following table summarizes the tests. All of these tests other than the Chi-Square Goodness of Fit Test can be done using a TI-83/84.

Section	Name	Null Hypothesis	Test Statistic	Notes
9.4	One Mean z-test	$\mu = \mu_0$	$z = \frac{\overline{x}-\mu_0}{\sigma/\sqrt{n}}$	Use z for σ known
9.5	One Mean t-test	$\mu = \mu_0$	$t = \frac{\overline{x}-\mu_0}{s/\sqrt{n}}$	Use t for σ unknown
10.2	Two Sample t-test	$\mu_1 = \mu_2$	$t = \frac{\overline{x}_1-\overline{x}_2}{s_p\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}}$	Pooled if $\sigma_1 = \sigma_2$
10.3	Two Sample t-test	$\mu_1 = \mu_2$	$t = \frac{\overline{x}_1-\overline{x}_2}{\sqrt{\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}}}$	Nonpooled if $\sigma_1 \neq \sigma_2$
10.5	Paired t-test	$\mu_1 = \mu_2$	$t = \frac{\overline{d}}{s_d/\sqrt{n}}$	Use t-test on differences
12.2	One Proportion z-test	$p = p_0$	$z = \frac{\hat{p}-p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$	
12.3	Two Proportion z-test	$p_1 = p_2$	$z = \frac{\hat{p}_1-\hat{p}_2}{\sqrt{\hat{p}_p(1-\hat{p}_p)}\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}}$	$\hat{p}_p = \frac{x_1+x_2}{n_1+n_2}$
13.2	Chi-Square Goodness of Fit Test	the frequencies are the same	$\chi^2 = \frac{(O-E)^2}{E}$	$E = np$
13.4	Chi-Square Test	variables are independent	$\chi^2 = \frac{(O-E)^2}{E}$	$E = \frac{(\sum row)(\sum column)}{total}$
16.3	Analysis of Variance	$\mu_1 = \mu_2 = \mu_3 = ...$	$F = \frac{MSTR}{MSE} = \frac{(n-k)\sum n_i(\overline{x}_i-\overline{x})^2}{(k-1)\sum(n_i-1)s_i^2}$	