Test	Conditions	Hypothesis Test	Confidence Interval	Calculator Operations
Z-Test σ is known	1. Provided σ - *The standard deviation of the population* 2. Random Sample 3. n < 10% of the population 4. Normal Population or $n > 30$ *If data is given, draw a boxplot or histogram-to show normality*	$z = \dfrac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$	$\bar{x} \pm z^* \dfrac{\sigma}{\sqrt{n}}$	**Hypothesis:** STAT, TESTS, Z-Test **Confidence Interval:** STAT, TESTS, Z Interval **Note:** *May use 2nd VARS normal cdf (lower, upper, mean, σ) to find the p-value,* ***BUT you must use*** $\frac{\sigma}{\sqrt{n}}$
T-Test σ is unknown Must use (s) the sample deviation	1. Random Sample 2. n < 10% of the population 3. Normal Population or $n > 30$ *If data is given, draw a boxplot or histogram-to show normality*	$t = \dfrac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$ *with df = n - 1*	$\bar{x} \pm t^* \dfrac{s}{\sqrt{n}}$ *with df = n−1*	**Hypothesis:** STAT, TESTS, T-Test **Confidence Interval:** STAT, TESTS, T Interval
Paired Sample T-Test n is the number of pairs	1. Paired Data Assumption 2. Random Sample 3. n < 10% of the population 4. Differences are independent 5. Normal Population or $n > 30$ *If data is given, draw a boxplot or histogram-to show normality*	$t = \dfrac{\bar{x}_d - \mu}{\frac{s_d}{\sqrt{n}}}$ *with df = n - 1* $\bar{x}_d$ the average of the differences of the sample means	$\bar{x}_d \pm t^* \dfrac{s_d}{\sqrt{n}}$ *with df = n - 1* s_d the standard deviation of the differences of the means	**Hypothesis:** STAT, TESTS, T-Test **Confidence Interval:** STAT, TESTS, T Interval If data is given, enter 1st set of data in L_1 and enter 2nd set into L_2. At the top of L_3 type 2nd L_1 - 2nd L_2. Then set the test to select L_3.
Difference of 2 means σ is unknown	1. Both samples are random 2. n < 10% of the population 3. Populations are independent 4. Normal Population or $n > 30$ *If data is given, draw a boxplot or histogram-to show normality*	$t = \dfrac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$ df from calculator	$\bar{x}_1 - \bar{x}_2 \pm t^* \sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}$ df from calculator	**Hypothesis:** STAT, TESTS, 2-Samp T-Test **Confidence Interval:** STAT, TESTS, 2-Samp T Int
Linear Regression $\hat{y} = \bar{y} + b(x - \bar{x})$	1. Random Sample 2. Linear Scatterplot 3. No pattern in residual plot 4. Residual distribution is normal	$t = \dfrac{b}{s_b}$ *with df = n−2*	$b \pm t^* s_b$ *with df=n-2* $s_b = \dfrac{s_e}{s_x\sqrt{n-1}}$ $S \text{ or } s_e = \sqrt{\dfrac{\Sigma(y - \hat{y})^2}{n-2}}$	**Hypothesis:** STAT, TESTS, Lin Reg T Test **Confidence Interval:** STAT, TESTS, Lin Reg T Int If data is given, enter independent (x) in L_1 and dependent (y) into L_2.

Test	Conditions	Hypothesis Test	Confidence Interval	Calculator Operations
Test for Proportions	1. Random Sample 2. n < 10% of the population 3. np & nq > 10 4. Normal Population or *n > 30*	$z = \frac{\hat{p} - p_0}{\sqrt{\frac{(p_0)(q_0)}{n}}}$	$\hat{p} \pm z^* \sqrt{\frac{(\hat{p})(\hat{q})}{n}}$	**Hypothesis:** STAT, TESTS, 1-Prop Z Test **Confidence Interval:** STAT, TESTS, 1-Prop Z Int **Note:** *May use 2nd VARS normal cdf (lower, upper, mean, σ) to find the p-value*
Difference of 2 Proportions	1. Random Sample 2. n < 10% of the population 3. np & nq > 10 4. Normal Population or *n > 30*	$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}_c(\hat{q}_c)(\frac{1}{n_1} + \frac{1}{n_2})}}$ $\hat{p}_c = \frac{\bar{x}_1 + \bar{x}_2}{n_1 + n_2}$	$\hat{p}_1 - \hat{p}_2 \pm z^* \sqrt{\frac{\hat{p}_1\hat{q}_1}{n_1} + \frac{\hat{p}_2\hat{q}_2}{n_2}}$	**Hypothesis:** STAT, TESTS, 2-Prop Z Test **Confidence Interval:** STAT, TESTS, T Interval
Chi-Squared Goodness of Fit Comparing Distributions	1. 1-sample with 1 variable 2. Random Sample 3. n<10% of the population 4. All expected values > 5 5. Counted data for observed	$\chi^2 = \frac{(obs - exp)^2}{exp}$ *with df = n-1* where n is the number of categories	*Confidence Interval Does not Apply*	**Hypothesis** STAT TESTS χ^2 GOF-Test If data is given, enter observed in L_1 and expected into L_2.
Chi-Squared Test of Independence	1. 1-sample with 2 variables 2. Random Sample 3. n<10% of the population 4. All expected values > 5 5. Counted data for observed	$\chi^2 = \frac{(obs - exp)^2}{exp}$ *with df = (r-1)(c-1)* r= the number of rows c= number of columns	*Confidence Interval Does not Apply*	**Hypothesis** STAT TESTS χ^2-Test For data: **Observed:** 2nd matrix→Edit →[A] **Expected:** 2nd matrix→Edit →[B]
Chi-Squared Test of Homogeneity	1. 2-sample with 1 variable 2. Random Sample 3. n<10% of the Population 4. All expected values > 5 5. Counted data for observed	$\chi^2 = \frac{(obs - exp)^2}{exp}$ *with df = (r-1)(c-1)* r= the number of rows c= number of columns	*Confidence Interval Does not Apply*	**Hypothesis** STAT TESTS χ^2-Test For data: **Observed:** 2nd matrix→Edit →[A] **Expected:** 2nd matrix→Edit →[B]