One Sample t-Tests	Independent Sample t-tests	Pair Sample t-tests
Determine if the mean from a sample is different from a particular value	Compare the mean of two different samples	Compare the mean of a variable under different conditions
$H_0$ : there is no difference between the tested mean and the value $H_1$ : there is larger/smaller than the tested mean and the value	H <sub>0</sub> : there is no difference in the tested variable between the two groups H <sub>1</sub> : there is difference in the tested variable between the two groups	$H_0$ : there is no difference between the two conditions $H_1$ : there is difference between the two conditions If $p \leq \alpha$ , then reject $H_0$ ; otherwise, fail to reject $H_0$
If $p \le \alpha$ , then reject $H_0$ ; otherwise, fail to reject $H_0$ Analyze – Compare Means – One-Sample T Test  Select the desired variable.  Paste	If $p \le \alpha$ , then reject $H_0$ ; otherwise, fail to reject $H_0$ Analyze – Compare Means – Independent-Samples T Test  Test Variable box: select the desired variable.  Group variable box: define the two groups  Continue.  Paste.	Analyze - Compare Means − Paired-Sample T Test  ➤ Select a pair of variables  ➤ Paste
t-test /testval=? variables= Tested-Variable *? in testval is the particular value that we want to compare our mean with.  For example, if we want to compare the mean of our tested variable, "grade," with "100," then our test val is 100, thus the code will be: t-test /testval = 100 variables = grade	t-test groups=Grouped-Variable(??) /variables=Tested-Variable.  *(??) is the two independent group.  For example, if we need to test for a math score, "math," for the "gender" variable, with "0" is male and "1" is female, then the code will be:  t-test groups = gender (0 1) /variables = math	t-test pairs= Variable1 with Variable2 (paired). For example, students need to take an English exam including two sections: reading and writing. Each section gives its own score as 'reading' and 'writing.' We want to compare the test score of students in these two sections, then the code will be: t-test pairs = reading with writing (paired)
One-Sample Statistics  N Mean Std. Deviation Mean	Group Statistics  Section N Mean Std. Deviation Mean	Paired Samples Statistics    Mean N Std. Deviation Mean
Test Value = 1   95% Confidence   Interval of the   Difference   Lower   Upper	Independent Samples Test  Levene's Test for Equality of Means  Hest for Equality of Means  95% Confidence Interval of the Difference  F Sig. t df Sig. (2-tailed) Difference Difference Lower Upper	Paired Samples Test  Paired Differences  95% Confidence Interval of the Difference  Mean Std. Deviation Mean Lower Upper t df Sig. (2-tailed)
A $t$ test <b><failed succeeded=""></failed></b> to reveal a statistically reliable difference between the mean of <b><tested-variable< b=""> (M, s)&gt; and <b><tested-value></tested-value></b>, <math>t</math>(<b><df>&gt;</df></b>), <math>p</math>* (* <math>p \le \alpha</math> or &gt; <math>\alpha</math> depending on whether we reject or fail to reject <math>H_0</math>)</tested-variable<></b>	A $t$ test <b><failed succeeded=""></failed></b> to reveal a statistically reliable difference between the mean number of <b><tested-variable></tested-variable></b> in <b><group1< b=""> (<math>M_1</math>, <math>s_1</math>)&gt; and <b><group2< b=""> (<math>M_2</math>, <math>s_2</math>)&gt;, <math>t</math>(<b><df>&gt;</df></b>), <math>p</math>* (* <math>p \le \alpha</math> or &gt; <math>\alpha</math> depending on whether we reject or fail to reject <math>H_0</math>)</group2<></b></group1<></b>	A paired samples $t$ test <failed succeeded=""> to reveal a statistically reliable difference between the mean number of <condition1 (<math="">M_1, <math>s_1</math>)&gt; and <condition (<math="" 2="">M_2, <math>s_2</math>), <math>t</math>(&lt;<math>df</math>&gt;), <math>p</math>*  (* <math>p \le \alpha</math> or &gt; <math>\alpha</math> depending on whether we reject or fail to reject <math>H_0</math>)</condition></condition1></failed>