

Hypothesis Testing for Two Sample

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CALCULATORS: Casio: *fx-9750G Plus* • Casio: *CFX-9850G Series*

Student Handout

A hypothesis test is conducted when trying to find out if a claim is true or not. And if the claim is true, is it significant. The calculator makes hypothesis testing easier by performing the computations.

After inputting the data that you have for a problem, the calculator will give you a p -value. The relationship between the p -value and the given level of significance for the problem will determine your decision. If $p < \alpha$, then you will reject the null hypothesis. If $p > \alpha$, then you will fail to reject the null hypothesis.

Hypothesis testing for the 2-sample mean for large independent samples uses a z -test.

You will need to have the following information for the hypothesis test:

- the null hypothesis
- the alternative hypothesis (this will tell you if you are using a one-sided or two-sided test)
- the means of each of the sample data sets
- the standard deviations of each of the sample data sets.
- The number in each sample.

Problem:

Every year you do an activity using plain M&M candies. You are interested in determining if the mean weight of the candies changes from one year to the next. The first year you sampled 100 M&M candies and found that the mean weight was 0.9147 grams and the standard deviation was 0.0369 grams. The next year you sampled 100 M&M candies and found that the mean weight was 0.9160 grams and the standard deviation was 0.0433 grams. Is the difference between the two sample means significant?

Answer: The z test statistic is **-0.22851** and the p -value is **0.81924**. Since the p -value is greater than **0.05**, you fail to reject the null hypothesis and conclude that there is not enough evidence to consider the two samples different.

Using the Calculator

- In the main menu, press **2(STAT)**.
- Press **F3(TEST)**. (It does not matter if data is in lists.)
- Press **F1(Z)**.
- Press **F2(2-S)**.
- Choose **Var** for Data.
- For this problem, choose \neq .
- Enter the standard deviations, means and sample sizes for the two samples of M&Ms.
- With **Execute** highlighted, press **F1(CALC)**.
- The answer will appear.