# Guided Workshop 4: Two-Sample T-Test Calculator

***Instructions:*** Download the file “Guided Workshop 4 – STARTER.xlsx”. I would recommend setting aside about an hour for this activity. When you are ready to start the workshop, open and begin the video “Guided Workshop 4: Two-Sample T-Test Calculator”.

The video will have optional in-video questions to help teach you and guide you along. You won’t submit this document, but it will be a good template/guide for the activity.

At the end, after you have completed the Excel file above, you will open the “Guided Workshop 4 Submission” quiz, where you will enter the answers to the questions at the end of this document.

***Background/Objective***

For this workshop, you’ll be creating a real-time two-sample T-test calculator (variances unknown). The user will be able to enter two sets of data into the worksheet (up to 40 samples for each data set) and two things will happen: 1) a comparison of variances will be performed to determine whether which of the “variance equal” or “variance unequal" case is applicable, and 2) a comparison of means will be performed on the two data sets. Excel has several built-in Data Analysis tools for comparing variances and means, but none of those tools calculates these statistics in a real-time manner.

When you are done putting together your Excel file, answer the following questions in the “Guided Workshop 4 Submission Quiz” on Coursera (the text fields below are only for your benefit – you won’t be submitting this document).

1. What is average of data set B when a value of 20 is added to cell C18? Click here to enter text.
2. What is the test statistic, F0 (cell G19), for the data provided? Make sure to remove the previously added value of 20 in cell C18. Click here to enter text.
3. What is the critical F-value (F\_0.1, cell G20) for our data? Click here to enter text.
4. What is the P-value (cell G21) for the given data for our comparison of variances? Click here to enter text.
5. What is the critical t-value (cell K20) for the given data for our comparison of means? Hint: It should be a negative number. Click here to enter text.
6. What is the P-value (cell K21) for the given data for our comparison of means? Click here to enter text.
7. What conclusions can you make about the second set of data (flow rate)? In other words, can variances be assumed to be equal or unequal? Can we accept or reject the alternate hypothesis for the comparison of means? Click here to enter text.

**That’s all! 😊**