Today we will collect data from a simulated DWI/DUI test called the Walk and Turn (WAT) sobriety test.  To perform the test you will be randomly assigned to WAT both with and without the Fatal Vision goggles.  A "police officer" will demonstrate the WAT test and then you will perform the tests and collect your data.  If you have two or more infractions, you do not pass the WAT test.  Use the table to collect your data (have someone in the group write for you while you are testing).  Once we return to class add your data to the class data.

## Class Data – Number of infractions

| | Males | | | | Females | |
|---|---|---|---|---|---|---|
| Subject | Without goggles | With goggles | | Subject | Without goggles | With goggles |
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Using the data you collected you will analyze the effectiveness of the Walk and Turn (WAT) test. For the purposes of this lab, I expect you to show all work. You are expected to continue with your inference procedures after checking the conditions ("proceed with caution," if necessary).

**Analyzing the Data:**

1. We wish to estimate the true mean number of infractions with the Fatal Vision goggles. Assuming our class (with goggles) is a representative sample of teenagers, find the 95% confidence interval for the mean number of infractions **with the Fatal Vision goggles** for teenagers.

2. How many people would we need to test to estimate the true mean number of infractions for people under the influence (wore goggles) during the WAT test to within 1.5 infractions with 99% confidence? Previous studies suggest a standard deviation of 3.625 infractions.

3. We will treat the data collected from the males and females in our class as representative of all males and females. Do the data provide evidence of a significant difference in the mean change in the number of infractions – when using the goggles versus without – between males and females? Perform an appropriate test at the $\alpha = 0.05$ significance level.

4. When Mr. Youn did the WAT test, he actually did better with the goggles than without!* Based on the data gathered, is there evidence that the mean number of infractions is greater when wearing goggles than when not wearing them?

   **Please perform <u>both</u> a 2-sample t-test AND a paired t-test** at a significance test at the $\alpha = 0.05$ level.

5. Which of the tests in the previous problem is more appropriate for the data that we have collected?  Explain.