1.
    a. Independent variable: The congruency of the words to the colors
    b. Dependent variable: The amount of time that it takes to name the ink colors
2. The null hypothesis for this task will be that the amount of time that it will take for participants to provide the color ink congruent to the words will be the same as the color ink that is incongruent to the words. The alternative hypothesis will be that the amount of time that it will take for participants to provide the color ink for incongruent words will be greater than that of the congruent words condition.

    In summary:

    $H_0 = \mu_{incongruent} = \mu_{congruent}$
    $H_A = \mu_{incongruent} > \mu_{congruent}$

    H_0 is the null hypothesis.
    H_A is the alternative hypothesis.
    $\mu_{incongruent}$ will represent the population of incongruent tests.
    $\mu_{congruent}$ will represent the population of congruent tests.

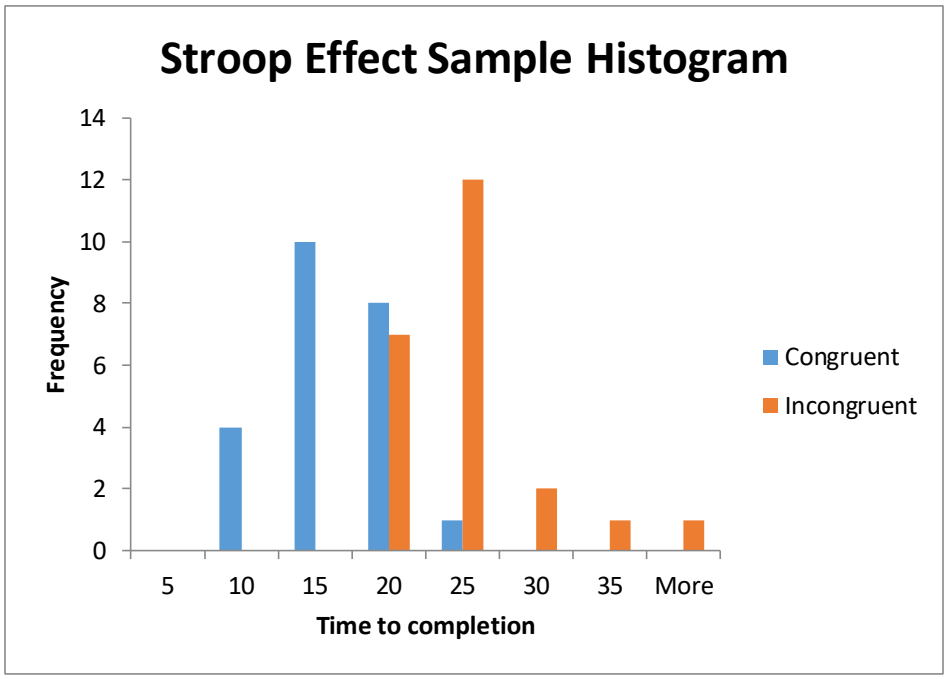
    To test this hypothesis, we plan to perform a dependent t-test for paired samples. We will choose 24 samples that will perform both a congruent test and an incongruent test and the results will be paired to produce differences between the two tests.

    The following are assumptions for the following test:

    - The samples are a random selection from the appropriate population
    - The tests performed for congruent sampling and incongruent sampling and between all samples were performed in relatively similar environments.
    - The scores are normally distributed in the population and therefore the resulting difference scores are normally distributed.

    The statistical test performed will be a one-tailed test with a standard alpha value of .05.

3. The mean difference between sample tests was 7.965. A standard deviation between the two sample tests was 4.865 and the resulting t-score is 8.021.



4. The shape of the histograms are very similar, but it is easy to tell that the mean of the incongruent tests are higher than the congruent tests.
   Excel charts are fun to work with ☺ (sarcasm)
5. With 23 degrees of freedom and a confidence level of 95% on a one-tailed test, the t-critical value is 1.714. With a t-score of 8.021, the difference falls in the critical region thus resulting in a rejection of the null hypothesis.
   This coincides with my expectations that having the written words of colors be different than the color will have a significant impact on the amount of time it would take an individual to identify the correct color ink.
6. There are several theories behind the Stroop effect. The biggest one being automaticity. We have trained our brains to read and process words when we say them. So even if the desired goal is to comprehend the color of the ink, we will typically process the word first and then look at the color second to process that information. One of the other popular tests is to show two numbers and recognize the one with the larger font. The first test is done with congruent numbers (i.e. 6 and 6) and the second test is done with incongruent numbers (i.e. 6 and 3).