1. What is our independent variable? What is our dependent variable?

Independent variable: two different conditions of congruent and incongruent words.
Dependent variable: the time it takes under different conditions to name the ink colors.

2. What is an appropriate set of hypotheses for this task? What kind of statistical test do you expect to perform? Justify your choices.

H0 : there won't be any time difference between two conditions.

Hc=Hi

H1 : The response time under incongruent words condition is different from the time under congruent words condition.

Hc<>Hi

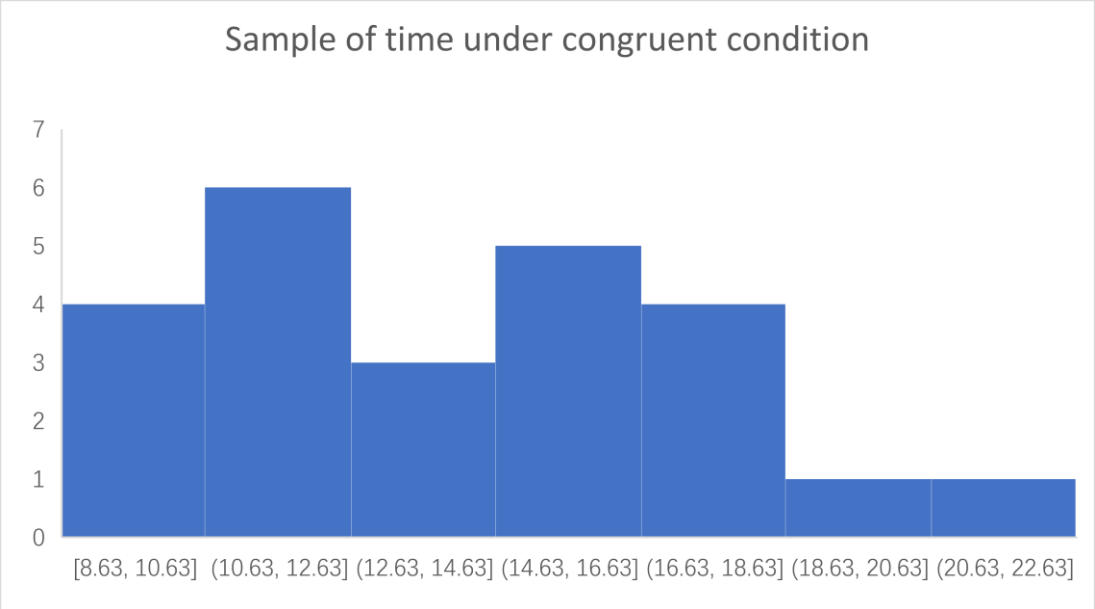
The goal is to test whether the time reading words under incongruent and congruent condition will have statistical significance.
There are 24 samples under each group and we don't have the populations parameters (mean and standard deviation). The distribution of populations is approximately normal plus the hypothesis not considering any directions, I'm going to use two-tail T test.

3. Report some descriptive statistics regarding this dataset. Include at least one measure of central tendency and at least one measure of variability.

Congruent : Mediean :14.3565 Mean: 14.05 Standard Deviation: 3.56
Incongruent : Mediean of 21.0175 Mean: 22.02 Standard Deviation: 4.80

4. Provide one or two visualizations that show the distribution of the sample data. Write one or two sentences noting what you observe about the plot or plots.

   The histogram shows the time under congruent condition is positively skewed and most participants take around 10.63 sec to 12.63 sec.



5. Now, perform the statistical test and report your results. What is your confidence level and your critical statistic value? Do you reject the null hypothesis or fail to reject it? Come to a conclusion in terms of the experiment task. Did the results match up with your expectations?
   a is 0.05. T-critical is Probability = 0.025 df=23
   Two tailed: t= 2.069
   Reject the hypothesis.
   The incongruent condition has statistical significance on the result under a=0.05
   Since the t-statistic is 8.02. much greater than the T critical, which means it won't likely happen that there is no time different between congruent and incongruent condition.
   The result match up with my expectation.

6. Optional: What do you think is responsible for the effects observed? Can you think of an alternative or similar task that would result in a similar effect? Some research about the problem will be helpful for thinking about these two questions!