1. The independent variable is the conditions we choose: congruent or incongruent conditions. Because we choose one of them in the experiment.
   The recorded time is a dependent variable. Because we measure it during the experiment.

2. Let's μ_1 is the congruent population mean and μ_2 is the mean of the non-congruent population.
   The null hypothesis is that the congruent time of reading will be approximately the same as the non-congruent time and any difference happened by chance, or **$H_o: \mu_1-\mu_2=0 \ (\mu_1=\mu_2)$.**
   The alternative hypothesis is that the congruent time of reading will be different than the non-congruent and the difference is caused by different conditions, or **$H_a: \mu_1-\mu_2\neq 0 \ (\mu_1\neq\mu_2)$.**
   I used two-tailed t-test, Because:
   - we do not know the mean and SD of the population
   - our sample size is less than 30
   - we assume that the distributions are normal
   - we test the mean of the differences of two repeated measures

3.

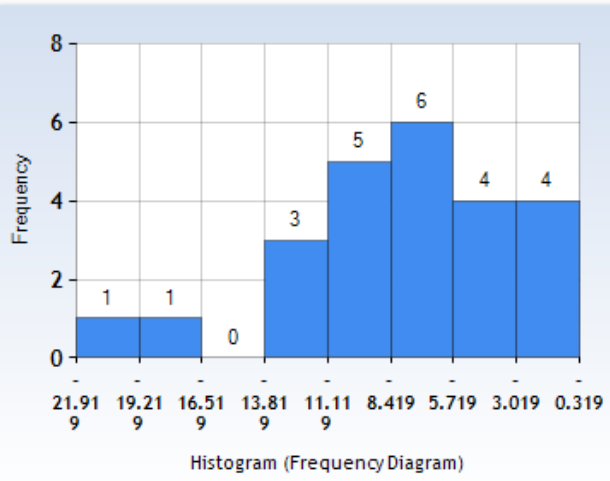
Difference of the Samples Means	-7.96
Min	-21.919
Q1	-10.2585
Median	-7.6665
Q3	-3.6455
Max	-1.95

SD of Differences
4.86

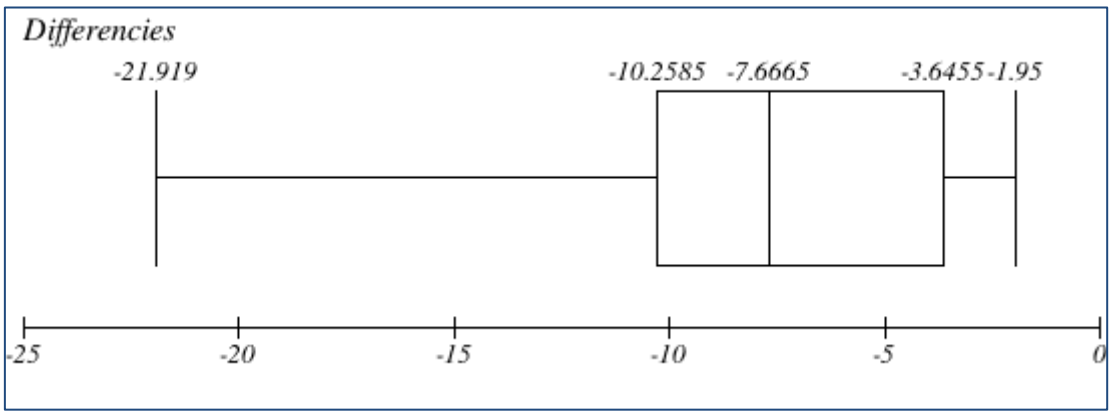
4. First is a histogram. Shows that we have negatively screwed distribution of the sample data. Also we can see that the mean is probably in the mode (-8.419; -5.719).

Frequency Table	
Class	*Count*
-21.919--19.22	1
-19.219--16.52	1
-16.519--13.82	0
-13.819--11.12	3
-11.119--8.42	5
-8.419--5.72	6
-5.719--3.02	4
-3.019--0.32	4

Your Histogram	
Lowest Score	-21.919
Highest Score	-1.95
Total Number of Scores	24
Number of Distinct Scores	24
Lowest Class Value	-21.919
Highest Class Value	-0.32
Number of Classes	8
Class Range	2.7



The second is a boxplot. Because it is a negatively screwed we assume that the mean is left of the median.



5. We have:

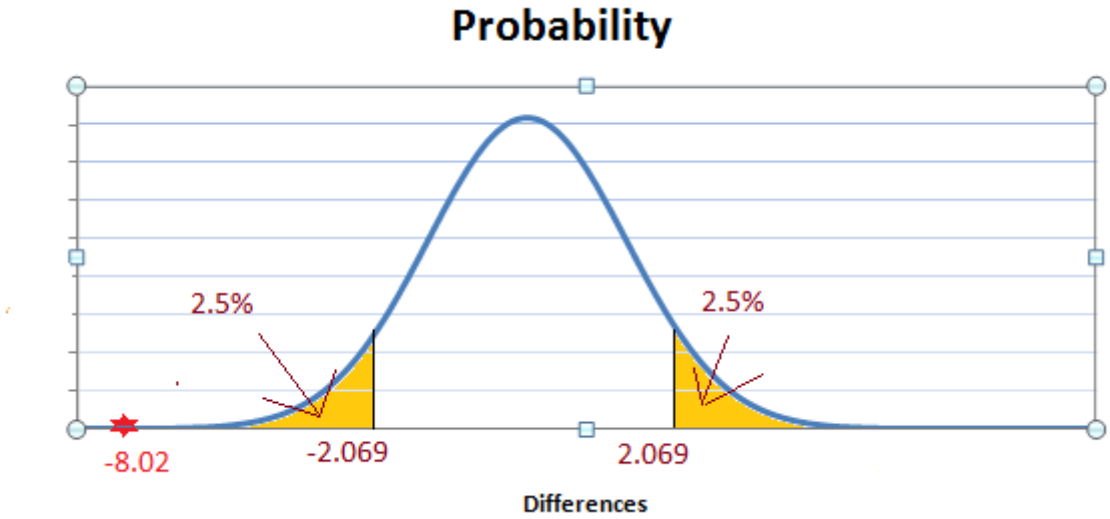
n=24
df=n-1=23
α=0.05
t-critica l= +/- 2.069

Ho: μ 1=μ 2 **Ha: μ 1≠μ 2**

We got after the test:

Mean of differences
-7.96

SD of Differences	t-statistic	Cohen's d	CI	
4.86	-8.02	-1.64	-10.02	-5.91



Here we see that t-statistic (-8.02) is much less than left t-critical (-2.069). What means that the probability to get the mean of sample -7.96 is in the left yellow zone, **X1<<X2.**
So we reject the Ho.

Here we see that incongruent-condition task takes much more time than the congruent-condition task. The test showed us that there is a significant difference between the means of two conditions.

6. My point is that the size of the list of colored words have the most effect to the measured time. A number of used colors has also significant effect. And off course it is critical that a participant has no idea about the Stroop effect.

There might be easier task: use only black, grey and white. I think it will show less differences of time.

7. The list of used resourses:
    - The Lesson 10 “t-tests” of the current project.
    - PDF files from the recourses tab of the project.
    - http://www.imathas.com/stattools/boxplot.html for BoxPlot
    - http://www.socscistatistics.com/descriptive/histograms/ for Histagram
    - MS Excel to draw the normal distribution of samples.