

MSDS 6371: Experimental Design MIDTERM: BONUS QUESTION

1. (3 pts) This data is the result of a quick test performed on a set of volunteers at SMU. There is a such things as tCDS (Transcranial direct current stimulation.) The theory is that by wearing a helmet that applies an electrical current to certain regions of the brain a subject may encounter an enhancement in memory. A group of researchers built a device to administer the current and wanted to test the phenomenon quickly and cheaply ... which is wear the college students come in. So the researchers were able to find 20 volunteers and first had them try and memorize as many words as possible from a list of commonly used words in three minutes. The researchers then placed the helmet and administered the tCDS and asked them to try and memorize as many words as possible form a similar but different list of words. They were again given three minutes. The data show the number of words each subject memorized before and after tCDS. Perform a complete analysis to determine if there is evidence that the tCDS treatment worked. Again, please provide a complete yet efficient complete analysis. The data are below:

Subject	Before tCDS	After tCDS
1	24	26
2	18	17
3	27	30
4	16	20
5	19	18
6	27	30
7	13	16
8	26	27
9	19	20
10	56	51
11	12	20
12	9	29
13	15	17
14	21	20
15	14	15
16	7	60
17	14	17
18	17	18
19	13	14
20	20	19

2. Use the permutation code we used earlier to generate an “exact” pvalue for the test performed in question