

Name _____
ID Number _____

Psychology 200 – Data and Statistics
Take Home Exam 3

Directions: Record your answers on this exam. Staple your work to the exam and make sure your name is on everything. All work should be stapled to the exam in the order that the questions were asked. You must show your work for ALL hand calculations to receive full credit (you may use a calculator for basic math functions but calculate statistics without SPSS). Round FINAL ANSWERS to the nearest 100th. Please follow ALL directions.

Computation (10 points):

In a one-sample t-test, what is the estimated standard error for a sample ($s = 21$) of 53 students? _____ (2 points)

In an independent samples t-test, what is the value of F_{MAX} when $s_1 = 23$ and $s_2 = 29$?
_____ (2 points)

In an independent-samples t-test, with two groups of equal size (n), Group 1 has a mean of 112 and a standard deviation of 19 and Group 2 has a mean of 119 and a standard deviation of 27. Calculate estimated Cohen's d . _____ (2 points)

In a related-samples (paired-samples) t-test, one set of scores has a mean of 2,366, and the other set of scores has a mean of 2,045. What is the mean of the difference scores?
_____ (2 points)

Jerri collects data from 100 people about how much mileage they put on their vehicle each week. She's interested in how age affects driving habits, so he divides the sample into two groups: people under 40 and people 40 or over. What type of t-test should Jerri use to make this comparison? _____ (2 points)

Study 1 (20 points): You are a researcher hired by Western Colorado University to investigate depression in psychology majors there. You ask a random group of 15 undergraduates majoring in psychology (ages 18 – 30) to fill out a survey regarding their support for the Health Care Reform act. Higher scores (on a scale from 1-10) indicate higher depression. Listed below is each person's score on your survey. The national average in depression for this age range as measured by this scale is $\mu = 5$. Calculate by hand (show your work) the appropriate t -test to determine whether the average depression in your sample is different from the national average. Name and follow the steps of hypothesis testing below.

ID	Survey Score
1	7
2	1
3	3
4	2
5	7
6	5
7	6
8	3
9	5
10	5
11	5
12	2
13	5
14	6
15	4

Test statistic (1 point):

Step 1 (2 points):

Step 2 (2 points):

Step 3 (4 points):

Step 4 (5 points):

Step 5 (4 points):

Step 6 (2 points):

Study 2 (20 points): You have recruited 43 people and randomly assigned them to either of 2 groups. Each person in the first group ($n = 21$) receives alcohol until their blood-alcohol content (BAC) is measured at .08. People in the second group ($n = 22$) receive water, and their BAC is measured to ensure that it is .00 before testing. Then, members of both groups are asked to complete the same word search containing 50 words. You are interested in whether the number of words found significantly differs between the two groups.

ID	Group	Words Found	ID	Group	Words Found
1	1	25	22	2	34
2	1	28	23	2	36
3	1	26	24	2	28
4	1	13	25	2	32
5	1	37	26	2	38
6	1	14	27	2	40
7	1	19	28	2	45
8	1	28	29	2	47
9	1	23	30	2	42
10	1	23	31	2	43
11	1	40	32	2	49
12	1	17	33	2	41
13	1	12	34	2	41
14	1	15	35	2	40
15	1	29	36	2	45
16	1	27	37	2	46
17	1	22	38	2	18
18	1	32	39	2	17
19	1	14	40	2	39
20	1	19	41	2	41
21	1	25	42	2	46
			43	2	27

Without using SPSS, **name** AND **conduct** the appropriate hypothesis test to determine whether the two groups significantly differ in number of words found. Be sure to **name** AND **follow** each of the six steps of hypothesis testing.

Use this page to show work.

For extra credit (2 points) calculate the opposite effect size statistic from the ones you did above (if you haven't already), 1 point for each study.