AS1(Assignment 1, Unit 5) Independent Measures t-test
Please write your responses in red ☺

A pharmaceutical company wishes to test the effects of a herbal supplement on anxiety levels. The researcher randomly selects a sample of n=16 adults from Essex County. The sample is randomly assigned to either the herbal supplement, Group B or a placebo, Group A.

Here are the data:

GROUP "A"   GROUP " B "
12, 16, 18, 21,   13, 18, 20, 16
17, l8, l8, 19   19, 21, 19, 22

l. What is the researcher's hypothesis? That the supplement will have an effect on the population's anxiety .

2. What is the null hypothesis? The supplement will have no effect on the population's anxiety .

3. What is the independent variable?
Herbal supplement

4. What is the dependent variable? The population of 16 people from essex county

5. What is the name of the *research design* in this study? Between subjects design

6. What is the appropriate *hypothesis test* to analyze the data from this study? Independent measures t test

$$t = \frac{M-M}{S_{m-m}}$$

7. What are the two mean "differences" you are analyzing in these data? Group A (17.4), which is the group receiving a placebo and Group B(18.5) that are receiving the herbal supplements

8. What is the definition of a random assignment? That each of the groups have different people than the other.

9. Why is using a random sample important in this study? To ensure that each participant is only measured once.

10. If a researcher failed to use random assignment, how would this affect the research conclusion?
Because bias can result in lack of liability on the experiment and its outcomes.

11. If a researcher failed to use a random sample, how would this affect the research results?
The results could be in favor of the researcher, causing an unprecedented outcome.

12. Run the appropriate SPSS analysis on the data and cut and paste your SPSS results here:

Group Statistics

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	8	17.3750	2.61520	.92461
	2.00	7	18.5714	3.10146	1.17224

Independent Samples Test										
	Levene's Test for Equality of Variances	t-test for Equality of Means								
	F	Sig.	t	df	Significance	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		

VAR00001					One-Sided p	Two-Sided p			Lower	Upper	
VAR00001	Equal variances assumed	.341	.569	-.811	13	.216	.432	-1.19643	1.47499	-4.38296	1.99010
	Equal variances not assumed			-.801	11.855	.219	.439	-1.19643	1.49300	-4.45382	2.06097

Independent Samples Effect Sizes

	Standardizer[a]	Point Estimate	95% Confidence Interval		
			Lower	Upper	
VAR00001	Cohen's d	2.84996	-.420	-1.439	.615
	Hedges' correction	3.02870	-.395	-1.354	.579

		Glass's delta	3.10146		-.386	-1.407	.666
a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control group.							

13. Based on your SPSS results, please answer the following questions:

(a) What is the appropriate decision, reject the null or fail to reject the null?

Reject the null hypothesis

(b) Write the "statistical statement" of your SPSS analysis:

t(-.811)= -0.36, p<0.5

(c) Please write your results as they might be written in a research study (refer to the "In the Literature" section of chapter lo of your textbook).

The herbal supplements affected the anxiety levels of group B with a mean of 18.5 sd: 3.1 while group A had a mean of 17.4 sd:2.6. The data reached significance. t(-.811)= -0.36, p<0.5

.432/-1.196= -0.36 low probability outcome

(d) Is there a probability of Type I error? Yes ___x_____   No _____

(e) Is there a probability of Type II error? Yes_____ No__x____