AS4 (Assignment 4, Unit 5)

SECTION I:

A randomized study on n=50 rats tested whether living in a crowded situation had an effect on stress levels. Based on this information, please answer questions 1-6

1. What is the researcher's hypothesis?
__living in a crowed situation will have an effect on stress levels.
_____

2. What is the null hypothesis?
__living in a crowed area will Not have an effect on stress levels.
_____

3. What is the independent variable? Crowded Situation_____

4. What is the dependent variable? _Stress Levels_____

5. What research design appears apparent here? _between subject design.
_____

6. What is the appropriate hypothesis test? Independent Measure T-test.
_____

A researcher wishes to know whether a newly developed teaching method has an effect on 5th grading reading scores. A sample of 5th graders are given a standardized test at the beginning of the school year and retested at the end of the school year. Based on this scenario, answers questions 7-12.

7. What is the researcher's hypothesis? The new teaching method will have an effect on 5th graders reading scores.
_____

8. What is the null hypothesis? The new teaching method will Not have an effect on 5th graders reading scores.
_____

9. What is the independent variable? New teaching method.
_____

10. What is the dependent variable? _N/A_____

11. What is the name of the "research design? Within-Subject design.

12. What is the appropriate hypothesis test to analyze the data from this study? Dependent Measure T-test.

SECTION II:

13. What is the definition of a random sample?
Is a sample in which everyone member in the population has an equal chance of being selected.

14. What is the definition of random assignment?
_Is when everyone in the sample has an equal chance of being put into the control group or the experimental group.

15. Imagine that the researcher failed to use a random sample. How would this failure limit her study's conclusions?
The researcher would not be able to generalize the results of a study conducted on a sample back to the population.

16. Imagine that the researcher failed to use random assignment in her study. How would this limit her research conclusions?
_The researcher could not assume that the only difference between the groups is the independent variable. Instead, the researcher would have to consider other variables which could be the cause of the observed effect.

17. No matter what hypothesis test you are using, there are two basic "differences" that you are analyzing in ALL hypotheses tests. What are these two "differences"?

l. _Differences between means because of the IV

2. __Differences between mean due to Error

18. What is meant by the term "statistical significance"?
A measure of probability of the null hypothesis being true compared to acceptable level of uncertainty regarding the true answer.

SECTION III:

A researcher tested whether drinking caffeine had an effect on anxiety. Below is an SPSS printout from an "independent measures t-test for the data he collected:

Group Statistics

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	6	4.8333	1.16905	.47726
	2.00	6	8.3333	.81650	.33333

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
VAR00001	Equal variances assumed	.537	.481	-6.012	10	.000	-3.50000	.58214	-4.79709	-2.20291
	Equal variances not assumed			-6.012	8.940	.000	-3.50000	.58214	-4.81824	-2.18176

19. Please write the "statistical statement" for the above SPSS results:

Answer: t (10) = -6.012, p<.05_______

20. What decision did you make at end of this test? _Reject the null Hypothesis.
_____

21. Are the data significant? Yes__x___ or No _____

22. Please write up the complete results for the above test:
The mean number for the group that drank the caffeine (caffeine drinking method) was M=8.33 with a SD = .816. The mean number for the group that did not drink the caffeine (placebo) was M=4.833 with a SD = 1.16. The was significant. The data supported that caffeine did have an effect on anxiety.

A researcher tested whether a particular lecture would have an effect on motivation. Below is an SPSS printout of a Paired Samples Test she used to analyze her data:

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAR00001	4.1250	8	1.45774	.51539
	VAR00002	5.0000	8	2.00000	.70711

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	VAR00001 - VAR00002	-.87500	2.10017	.74252	-2.63079	.88079	-1.178	7	.277

22. Please write the "statistical statement" for the above SPSS results:

Answer: _t (7) = -1.178, p>.05

23. Did you reject or fail to reject the null hypothesis? _Fail to reject the null hypothesis.

24. Is this a within or between subject design? Within subject design.

25. Are the data significant? Yes_____ No__x____

26. Is there a probability of Type I Error? Yes__x___ No_____

27. Please write up the research results for the above:

The mean number for the effect on motivation before the lecture was M = 5.0 with an SD = 2.0. The mean number for the effect on motivation after the lecture was M = 4.12 with an SD = 1.45. The data failed to reach a significance. t (7) = -1,178, p>.05