

Lab #11: Continuous Variables (2 sample)

- 1) a. Explain each of the types of errors as well as each of the types of correct decisions. For each, indicate their probabilities of occurrence.
b. What factors influence the power of a test?
c. How are Beta and Alpha related?
- 2) Suppose you want to know if caffeine increases running speed. You randomly choose 24 students to participate in a timed 40-meter dash. 12 are given caffeine and 12 are given a placebo. You attain the following results (in seconds). Does caffeine affect running speed?

Caffeine	6.2	5.3	6.1	7.8	5.1	6.0	7.1	5.5	6.3	6.2	6.1	5.8
No Caff	5.1	5.1	6.0	7.3	6.8	6.9	7.0	5.4	7.4	5.7	6.1	6.3

- 3) A researcher wants to know if students are better at multiplication or division. She gives 6 students a test containing both multiplication and division problems (10 each). She then measures their performance by counting the number of correct responses for each category. The following data represents the number of correct responses. Are students better at multiplication or division?

Multiplication	6	6	8	8	9	10
Division	5	8	9	9	9	10

- 4) When should one utilize a 1 sample z test?
a. SD of the sample is known
b. SD of the sample is unknown
c. SD of the population is known
d. SD of the population is unknown
- 5) When should one utilize a 1 sample t test?
a. SD of the sample is known
b. SD of the sample is unknown
c. SD of the population is known
d. SD of the population is unknown
- 6) If the alpha goes from .01 to .05, what will happen to the critical value of t?
a. Decrease
b. Increase
c. Stay the same
d. Depends on situation
- 7) Which one of the following does NOT influence the power of a test?
a. Variability
b. The t statistic
c. Sample size (N)
d. Test directionality
- 8) Sampling Error is the difference in
a. samples due to treatment effect
b. samples used to estimate population
c. populations due to treatment effect
d. populations used to estimate sample