

PSYC 610 -- Thought questions for the first set of material

1. What is a sampling distribution?
2. What is the standard error of the standard deviation?
3. What is the difference between a Type I and a Type II error? What might prompt an investigator to use an alpha level other than .05? What types of factors might weigh into this decision?
4. What is meant by the term "confound"?
5. What information does a variable on an ordinal scale of measurement provide that a variable on a nominal scale of measurement does not.
6. How do you know when to perform a one-sample t-test rather than a Z-test?
7. What is the sampling distribution of the difference between means? Why can't you conduct an independent samples t-test without it?
8. When sample sizes are very large (> 100 per group), what will the shape of the t-distribution look like? Why is the shape of the t-curve different when a sample size of 10 is used compared to when a sample size of 100 is used?
9. Please present your explanation for why the equation for t for a one-sample test is really just the equation for a standard score.
10. An investigator conducts a one-sample t-test and gets a value for t of +3.41. What does this number mean? The significance level for this test is .015. What does this number mean?
11. What general strategy do the z-test, one-sample t-test, and an independent samples t-test (two sample t-test) have in common? What is the basic logic behind these tests of statistical inference?
12. Under what conditions is the median a better measure of central tendency than the mean? Why is this?
13. When an investigator uses a frequency distribution to get a sense of how the scores are distributed, why should they consider generating several different versions of this frequency distribution (in terms of interval width or the starting point for the first interval)?
14. What's the difference between an independent variable and a dependent variable?
15. How are the alpha level for a statistical test and the critical value for that test related to each other?

16. How are the critical value for a statistical test and the sampling distribution for that test related to each other?
17. What are the advantages of converting raw score to standard scores? What are the “units of measurement” for a set of standard scores?
18. Why can’t you draw a conclusion about cause and effect from a correlational study, but you can from an experiment?
19. What is the rationale for obtaining an adjusted correlation?
20. What is the sampling distribution of the correlation coefficient? Why do we need it?
21. What information does a squared correlation provide?
22. What kind of question can the covariance answer that the sum of the cross-products cannot?
23. What kind of question can a correlation coefficient answer that the covariance cannot?