

Disclaimer: There are many topics covered in this course which are absent in this review. The final exam is cumulative and you are responsible for all topics covered in your course.

Ignore any problems with ~~Strikethroughs~~

Review

- 1) Calculate $z_{0.04}$. That is, compute the value so the area to the right of the value and beneath the standard normal curve is 0.04.
- 2) ~~Calculate $t_{0.05,7}$. That is, compute the value so the area beneath the t distribution of 7 degrees of freedom but to the right of the value is 0.05.~~

Critical Values

- 3) ~~Calculate the critical value which would be used to test the hypotheses $H_0: \mu = 4$ versus $H_a: \mu < 4$ at a 5% level of significance if we use a simple random sample of 12 elements. Assume the population standard deviation is unknown.~~
- 4) ~~Referring to Critical Values, what do we assume about the random variable x for which μ denotes the mean value?~~

Final Exam

Suppose the average value on the final exam is 78% with a standard deviation of 7%. Assume the exam scores are normally distributed.

- 5) Referring to Final Exam, find the probability that a student scores between 70% and 85%.
- 6) Referring to Final Exam, find the upper 10% of exam scores.

- 7) Referring to Final Exam, find a 90% confidence interval for students' exam scores, i. e., find and interval centered at 78 so that 90% of the exam scores fall within the interval.

Tulane

Suppose that 30% of Tulane students will remain in New Orleans throughout the summer. Suppose we randomly select 10 Tulane students.

- 8) Referring to Tulane, find the expected number of students who will remain in New Orleans.
- 9) Referring to Tulane, find the standard deviation of the number of students who will remain in New Orleans.
- 10) Referring to Tulane, find the probability that 2 or 3 of the students in the sample will remain in New Orleans throughout the summer.
- 11) Referring to Tulane, should we use the normal approximation to the binomial (or the Central Limit Theorem for \hat{p}) to approximate the probability computed in the preceding problem? Why or why not?

Position

We have 7 men who are candidates for a position and 4 women who are candidates for the position.

- 12) Referring to Position, if we randomly select 3 of the 11 candidates for position, what is the probability that all three are men?
- 13) Referring to Position, if we randomly select 3 of the candidates from the group of 11, what is the probability that 2 men and one woman will be selected?

14) Referring to Position, if we randomly select 3 individuals for the position, what is the expected number of men?

15) Suppose that we have events A and B so that $P(A)=0.35$ and $P(B) = 0.45$.

Find $P(A \text{ or } B)$, if $P(A|B)=0.23$.

16) *Suppose that 40% of American adults have attended a college for at least one semester. If we select a simple random sample of 200 American adults, what is the probability that at least 90 of the individuals in the sample have attended a college for at least one semester?*

17) Suppose that the average appraised value of a house in Orleans Parish is \$190,000 with a standard deviation of \$20,000. If we obtain a simple random sample of 100 Orleans Parish houses, what is the probability that the sample average appraised value will fall between \$186,000 and \$193,000?

Nutritionist

A nutritionist believes that he can demonstrate that over 40% of adolescents in the United States are overweight. A 5% level of significance established. In order to test the nutritionist's hypothesis a simple random sample of 500 teenagers is obtained. 218 of the adolescents are found to be overweight.

18) Referring to Nutritionist, what is the alternative hypothesis?

19) Referring to Nutritionist, give the critical value(s). Equivalently, give the endpoint(s) of the rejection region.

20) Referring to Nutritionist, give the p-value.

21) Referring to Nutritionist, give the test statistic.

22) Referring to Nutritionist, what is the conclusion?