

Mthsc 301: Statistical Methods
Test 3
Closed Book/Notes

November 8, 1999

1. The scores of a national test has an average of 65 points with a standard deviation of 5.5. If the test scores for 30 students are averaged.
 - (a) Find the probability that the average exceeds 67.

 - (b) Find a point c such that 95% of the averages of 30 test scores will exceed c .

2. Crop researchers plant 60 plots with a new variety of corn. The average yeild for these plots is 140 bushels per acre. Assume that $\sigma = 12$ bushels per acre.

(a) Find a 95% CI for the mean yeild μ .

(b) Does this variety seem to give a yeild significantly less than 145 bushels per acre?(State the hypotheses and do a formal test).

(c) If a 95% CI for the mean does not include the value 145, is there evidence to conclude that $\mu \neq 145$?Why?

3. In order to estimate mean annual rainfall for upstate SC, we look at past four years records and find the rainfall amounts are 75,67,89 and 102.

(a) Find a 95% CI for the annual rainfall

(b) Is the mean annual rainfall significantly different from 72?

4. It is suspected that the average response time to a signal after consuming alcohol increases in people. 4 students are invited for this test and the response times before and after each had a six pack of beer was measured. The observed data was

student#	1	2	3	4
before	5	6	4	4
after	8	6	7	5

(a) Find a 95% CI for the average difference in response time due to alcohol

(b) Test at 0.05% level whether people become slow in responding this type of signals after drinking.