Quiz 5 for Statistics 301
Elementary Statistical Methods - Fall 2000
Material Covered: Section 9.4 of Workbook and Sections 9.5,9.6 of text
Friday, 3rd November

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question.

Name (please print): _____ . **ID Number:** _____.
last first

One large group of males who sleep in the range from 250 to 275 minutes per night were randomly divided into two groups. The two groups were put on two different diets and after 5 months, the increase in average sleep amount was determined for each person. The results are given below.

	diet 1	diet 2
$\bar{x}$	20.5	14.8
s	5.5	6.5
n	34	34

Test if the average amount of sleep under diet 1 is *greater* than the average amount of sleep under diet 2 at 5%.

(a) [1] Circle all the *true* (correct) statements.

(i) This test asks which of one of two possible choices for the parameter $\mu_1 - \mu_2$ is correct.

(ii) This is a right–sided test.

(iii) The null hypothesis is $H_0 : \bar{x}_1 - \bar{x}_2 = 0$.

(iv) The two groups of men have been chosen independently of one another.

(v) The amount of time sleeping for both groups must follow a normal distribution.

(b) [1] The observed value of the test statistic (which, remember, can be either standardized or not) is equal to (circle none, one or more) **−5.70** / **−3.90** / **0** / **3.90** / **5.70**.

(c) [1] The p–value is equal to
(circle none, one or more) **0.47** / **0.047** / **0.0047** / **0.00047** / **0.000047**.

(d) [1] The critical value is equal to (circle one) **−2.33** / **−1.78** / **1.65** / **1.78** / **2.33**.

(e) [1] We agree with the claim that the amount of sleep under diet 1 is greater than the amount of sleep under diet 2 because (circle none, one or more)

(i) the p–value is larger than the level of significance.

(ii) the test statistic is smaller than the critical value.

(iii) the p–value is smaller than the level of significance.

(iv) the test statistic is larger than the critical value.

(v) the test statistic is larger than the level of significance.

(a) (i), (ii), (v) (not (iii) because $\bar{x}$ are statistics; not (iv) since each group chosen from a larger group and so one individual picked for one group cannot be in the other group)

(b) **3.90**, **5.70**

(c) **0.000047**

(d) **1.65**

(e) (iii), (iv)