

COURSE: MSCI 3710

Print Name:

Final Exam

Signature:

Version A

S.S. #:

Spring 2003

Seat Number:

Instructions:

- Please print your name, social security number, and seat number on this exam. Also, put your signature on this exam.
- On your scantron **PRINT** your name, your version, and your seat number. To better protect your privacy also print your name on the back side of your scantron.
- You have 105 minutes to complete this exam. The exam is open book, open notes, and open mind. You may use any type of calculator but please show all your work on the exam and mark all answers on the scantron.
- Many of the questions follow the format of those in Adventures in Business Statistics. The remaining questions are either based on the Excel assignment or use an Adventures-like approach with problems nearly identical to those assigned in the textbook.
- When you have completed the exam, please insert your scantron into the exam booklet and turn them into your instructor.
- No cheating.
- Good luck and we wish you well on the exam.

Note: Whenever question(s) are connected you may be asked to assume a result (given a value) from the previous question but this result may or may not be correct. This is to prevent you from losing points on a second question because you made a mistake on a previous question.

I. Use the information given in the paragraph below to answer the next **four** questions.
(Kvanli Chapter 8)

Historically, the time spent by MCSI3710 students on trying to certify any AIBS homework is known to have a mean of 29 minutes. In order to examine the claim that Homework 10.1 was actually less time consuming, an instructor asked a 10 students how much time they spent on it. Their times had a mean of 23 minutes and a standard deviation of 11 minutes. Conduct the appropriate hypothesis test, at the 5% significance level.

1. What are the null hypothesis and alternative hypothesis for this test?

- A. $H_0: \mu = 29$ vs. $H_a: \mu \neq 29$
- B. $H_0: \mu \geq 29$ vs. $H_a: \mu < 29$ *
- C. $H_0: \mu = 23$ vs. $H_a: \mu \neq 23$
- D. $H_0: \mu \leq 29$ vs. $H_a: \mu > 29$
- E. $H_0: \mu \leq 23$ vs. $H_a: \mu < 23$

2. What kind of test statistic should be used in this case?

- A. z
- B. t *
- C. X^2
- D. p
- E. F

3. The decision rule is to reject H_0 if the computed test statistic is:

- A. > 1.833
- B. < -2.262
- C. < -1.645
- D. < -1.833 *
- E. < -1.96

4. Assuming the calculated value of the test statistic is -1.56 , what is the conclusion of the test?

- A. Reject the null hypothesis. There is sufficient evidence that the new mean is less than 29 minutes.
- B. Fail to reject the null hypothesis. There is sufficient evidence that the new mean is less than 29 minutes.
- C. Fail to reject the null hypothesis. There is insufficient evidence that the new mean is less than 23 minutes.
- D. Fail to reject the null hypothesis. There is insufficient evidence that the new mean is less than 29 minutes. *
- E. Reject the null hypothesis. There is sufficient evidence that the new mean is less than 23 minutes.

II. Use the information given in the following paragraph to answer the next **three** questions. (Kvanli Chapter 9)

A recent commercial claims that the international phone call rates offered by IDT are lower than those of MCI. A consumer decided to test this claim by collecting and analyzing data from IDT's and MCI's Web sites (www.idt.net, www.mci.com). The rates offered by each company, in cents per minute, for international calls from the U.S. to 14 selected countries and their statistical analysis are listed below. Is it true that IDT rates are lower?

Country	MCI	IDT
Argentina	19.0	20.0
Brazil	19.0	20.0
Canada	5.0	5.0
China	17.0	16.0
France	12.0	7.0
Germany	12.0	7.0
Greece	12.0	17.3
India	33.0	59.0
Israel	15.0	11.0
Italy	12.0	7.0
Japan	14.0	9.0
Mexico-1	10.0	19.0
Russia	23.0	19.0
U.K.	10.0	7.0

t-Test: Paired Two Sample for Means, alpha = 0.05

	MCI	IDT
Mean	15.21429	15.95
Variance	46.95055	186.12731
Observations	14	14
Pearson Correlation	0.867511	
Hypothesized Mean Difference	0	
df	----	
t Stat	-0.32696	
P(T<=t) one-tail	0.374452	
t Critical one-tail	1.770932	
P(T<=t) two-tail	0.748903	
t Critical two-tail	2.160368	

5. What are the decision and conclusion using a **dependent** samples t-test if the test is conducted at the 5% significance level?

- A. There is insufficient information to decide whether IDT rates are lower.
- B. Fail to reject the null hypothesis, conclude IDT rates are lower.
- C. Fail to reject the null hypothesis, conclude there is insufficient evidence for IDT rates being lower. *
- D. Reject the null hypothesis, conclude IDT rates are not lower.
- E. Reject the null hypothesis, conclude IDT rates are lower

6. How many degrees of freedom do we have in the distribution of the test statistic?

- A. 26
- B. 27
- C. 13 *
- D. 14
- E. 28

7. What is the critical value of the test statistic for this test if the test is conducted at the 5% significance level?

- A. 1.77 *
- B. 2.16
- C. 0.37
- D. 0.74
- E. 1.645