

COURSE: MSCI 3710

Print Name:

Exam 1

Signature:

Version D

S.S. #:

SEMESTER: Fall 2003

Instructions:

- Please print your name and social security number on this exam. Also, put your signature on this exam.
- On your scantron **PRINT** your name, your version, and your section number. To better protect your privacy also print your name on the backside of your scantron.
- You have **75 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.
- Please **DO NOT** pull this exam apart. When you have completed the exam, please insert the scantron into the exam booklet and turn them in to 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.

Use the information given in the following paragraph to answer the next three questions. An accountant for Yummy pizza franchises claims that stores generate an average monthly revenue of at least \$45,000 per store. A potential investor who is considering purchasing a Yummy pizza franchise is doubtful about this claim, believing that the average monthly revenue might be less than \$45,000. She obtains a sample of revenues from 20 stores and conducts a statistical analysis on the data using Excel, the results of which are shown below.

t Test for Population Mean	
Revenue	
Number of Observations	20
Sample Standard Deviation	2306.449285
Sample Mean	43626.250000
Ho: $\mu \geq 45000$	Ha: $\mu < 45000$
T*	-2.663660
P[T \leq T*]	0.007672
T Critical, $\alpha = 0.01$	XXXX
99% CI for Pop. Mean	42150.753771
	t o XXXXX

- What is the critical value of the test statistic to test the investor's belief?
 - . 45000
 - . -2.54*
 - . 0.007
 - . 0.05
 - . 42150.7
- What is the conclusion of the test concerning the investor's belief, conducted at the 1% significance level, and reason for the conclusion?
 - . Conclude there is insufficient evidence the average monthly revenue is less than \$45,000 because the p-value is greater than the significance level.
 - . Conclude there is evidence the average monthly revenue is less than \$45,000 because the p-value is smaller than the significance level.*
 - . Conclude there is evidence the average monthly revenue is less than \$45,000 because the p-value is greater than the significance level.
 - . Conclude there is insufficient evidence the average monthly revenue is less than \$45,000 because the p-value is smaller than the significance level.
 - . Conclude there is evidence the average monthly revenue is at least \$45,000 because the test statistic is greater than the significance level.
- Which of the following would you expect to be obtained from the sample as the upper limit of the 99% confidence interval for the average monthly revenue?
 - . 44097.9
 - . 45101.7*
 - . 45854.5
 - . 35626
 - . 42150.7

Information given in the paragraph below to answer the next two questions.

The personnel manager of Star Inc. wishes to determine if the number of sick days reported by each employee in 2002 at its Dallas plant was any different from the number of sick days reported in 2002 at its Austin plant. Random samples of employees in Dallas and Austin are selected, and the following results are obtained with Excel assuming equal variances and alpha of 0.10.

t-Test: Two-Sample Assuming Equal Variances

	Dallas	Austin
Mean	7.5	5.1
Variance	8.277778	3.211111
Observations	10	10
Pooled Variance	5.744444	
Hypothesized Mean Difference	0	
df	18	
t Stat	2.239093	
P(T<=t) one-tail	0.019009	
t Critical one-tail	1.330391	
P(T<=t) two-tail	0.038018	
t Critical two-tail	1.734063	

4. Assuming the variance in the number of sick days reported for all employees at the Dallas plant is equal to that for all employees at the Austin plant, what is the calculated value of the test statistic for testing whether there is a difference in the number of sick days reported?

- RRRRRRRRRR. 1.33
- SSSSSSSSSS. 0.025
- TTTTTTTTTT. 0.53
- UUUUUUUUUU. 1.73
- VVVVVVVVVV. 2.23*

5. Which one of the following would best describe the p-value of the test?

- A. $p > 0.1$
- B. $0.01 < p \leq 0.025$
- C. $0.025 < p \leq 0.05^*$
- D. $0.05 < p \leq 0.1$
- E. $p \leq 0.1$

Use the information given in the paragraph below to answer the next three questions.

Hourly wages in a retailing industry are normally distributed with a mean of \$15.25 and a standard deviation of \$2.20. A random sample of 40 workers was taken from a firm belonging to this