

BUS210
Final Examination

1. The “just in time” policy of inventory control is growing in popularity. For example, General Motors spent \$2 billion on its Oshawa, Ontario, plant so that it will be less than one hour from most suppliers. Suppose that an automobile parts supplier claims to deliver parts to any manufacturer in an average time of less than one hour. In an effort to test the claim, a manufacturer recorded the times of 24 deliveries from this supplier. These data are listed below. Can we conclude at the 5% level that the supplier’s assertion is correct?

DELIVERY TIME (IN MINUTES)

55	62	53	72	58	57	51	64	58	52
58	48	45	55	64	62	59	51	61	69
63	60	61	49						

2. A management behavior analyst has been studying the relationship between male/female supervisory structures in the workplace and the level of employees’ job satisfaction. The results of a recent survey are shown in the table below. Conduct a test at the .05 level to determine whether the level of job satisfaction depends on the boss/gender gender relationship.

SATISFACTION LEVEL	F/M	<u>GENDER OF BOSS/EMPLOYEE</u>		
		F/F	M/M	M/F
SATISFIED	21	25	54	71
NEUTRAL	39	49	50	38
DISSATISFIED	31	48	10	11

3. In a study to determine whether sex affects salary offers for graduating MBA students, 25 pairs of students were selected. Each pair consisted of a female and a male student who were matched according to their GPAs, courses taken, and work experience. The highest salary offered (in thousands) to each graduate was recorded and is shown below. Is there enough evidence at the 5% level to infer that sex is not a factor in salary offers?

MBA Pair	1	2	3	4	5	6	7	8	9
Female Offer	71	55	68	61	62	54	44	49	42
Male Offer	72	60	70	63	61	49	48	47	40
MBA Pair	10	11	12	13	14	15	16	17	18
Female Offer	55	67	69	69	71	47	68	48	49
Male Offer	53	69	72	71	71	48	72	53	50
MBA Pair	19	20	21	22	23	24	25		
Female Offer	62	42	42	47	47	57	46		
Male Offer	54	46	44	50	47	58	42		

4. A firm's marketing manager believes that total sales for the firm next year can be modeled by using a normal distribution, with a mean of \$2.5 million and a standard deviation of \$300,000.

- What is the probability that the firm's sales will exceed \$3 million?
- What is the probability that the firm's sales will fall within \$150,000 of the expected level of sales?
- In order to cover fixed costs, the firm's sales must exceed the break-even level of \$1.8 million. What is the probability that sales will exceed the break-even level?
- Determine the sales level that has only a 9% chance of being exceeded next year.

5. A firm has been accused of engaging in prejudicial hiring practices. According to the most recent census, the percentages of whites, blacks, and Hispanics in the community where the firm is located is 70%, 12%, and 18% respectively. A random sample of 200 employees of the firm revealed that 165 were white, 14 were black, and 21 were Hispanic. What can you conclude at the 5% significance level from these data? (Note: Use percentages from population to obtain Expected values.)

6. A restaurant located in an office building decides to adopt a new strategy for attracting customers to the restaurant. Every week it advertises in the city newspaper. To measure how well the advertising is working, the restaurant owner recorded the weekly gross sales for the 10 weeks after the campaign began and the weekly gross sales for the 10 weeks immediately prior to the campaign. These data are listed below. Can the restaurateur conclude that the advertising campaign is successful?

GROSS SALES DURING CAMPAIGN (\$100s)

54 60 57 58 73 59 54 56 61 55

GROSS SALES BEFORE CAMPAIGN (\$100s)

56 49 48 44 45 52 54 50 57 45

7. Given the following data:

X: 115 220 86 99 50 110

Y: 1.0 1.3 0.6 0.8 0.5 0.7

Draw a scatterplot, calculate the Pearson Product Moment Correlation Coefficient, calculate and interpret the Coefficient of determination, and test the correlation coefficient to determine whether we can infer that a significant relationship exists between the two variables (use the 5% level).

8. The number of items rejected daily by a manufacturer because of defects was recorded for the last 25 days, and are as follows:

21 8 17 22 19 18 19 14 17 11 6
 21 25 19 9 12 16 16 10 29 24 6
 21 20 25

Construct a frequency distribution and draw a frequency polygon for the data using five class intervals, with the lower boundary of the first class being 5 items.

9. It is doubtful that any sport collects more statistics than baseball. Fans are always interested in determining which factors lead to successful teams. The table below lists the team batting average and the team winning percentage for the 14 American League teams at the end of a recent season.

- Write the regression equation
- Predict the winning percentage for a team with a batting average of .275
- Calculate and interpret the Coefficient of determination.

TEAM	BATTING AVERAGE	WINNING PERCENTAGE
Baltimore	.254	.414
Boston	.269	.519
California	.255	.500
Chicago	.262	.537
Cleveland	.254	.352
Detroit	.247	.519
Kansas City	.264	.506
Milwaukee	.271	.512
Minnesota	.280	.586
New York	.256	.438
Oakland	.248	.519
Seattle	.255	.512
Texas	.270	.525
Toronto	.257	.562

10. One reads that a business school graduate with an undergraduate degree earns more than a high school graduate with no additional education. To test this, a random sample of 16 executives from companies with assets over \$1 million was selected. Their incomes, classified by highest level of education, follow. Test at the .05 level of significance that there is no difference between the two groups.

<u>INCOME</u>	
<u>HIGH SCHOOL</u>	<u>UNDERGRADUATE DEGREE</u>
45	49
47	57
53	85
62	73
39	81
43	84
54	89
	92
	62