Elementary Statistics

Chapter 4/5 Test Review

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1. Given the following data: (40 points)

Time (Years)	1	2	3	4	5
Profit (thousands)	8	10	15	21	33

a) Draw the scatter diagram

b) Find the correlation coefficient

c) Does a linear relation exist (provide proof)

d) Find the least squares regression line

e) Draw the scatter diagram again with the least squares regression line graphed on it

f) Predict the profit at eight years

g) Compute the sum of the squared residuals

h) Find the residual at year 6 assuming the profit is 50.

i) Find the coefficient of determination and explain what this means about the variation

j) Draw the residual plot

2. Given the following data: (5 points)

	Arkansas City	Winfield		
Some College, No Degree	1884	1986		
Associate's Degree	839	758		
Bachelor's Degree	711	1115		

Build a relative frequency marginal distribution

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3. Given the following data: (5 points)

	Arkansas City		Winfield	
Some College, No Degree	1884		1986	
Associate's Degree	839		758	
Bachelor's Degree	711		1115	

Build a conditional distribution by city

4. Given the sample space of the gender possibilities for the birth of 3 children. (5 points)

5. In Arkansas City, there are 5,534 total housing units of which 241 are mobile homes, if you were to pick a person at random in Ark City, what is the probability that person lives in a mobile home? (5 points)

6. Of all the females (without husbands) with children under 18 in Ark City, it is known that 56.5% of them are living on an income under the poverty level. What is the probability that you will pick 3 females (without husbands) with children under 18 in Ark City and they all are under the poverty level? (5 points)

7. In the United States, 1 out of 37,500 people are bit by venomous snakes each year. If you pick 5 people out at random, what is the probability that at least one was bit by a venomous snake last year? (5 points)

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8. Given the following table: (10 points)

	Full-Time Students	Part-Time Students
Female	500	200
Male	400	100

a) What is the probability of picking a student and they are full-time?

b) What is the probability of picking a student and getting a female or part-time student?

c) What is the probability of picking a student and getting a male student given they are part-time?

d) What is the probability of picking a student and getting a student who is female and part-time?

9. Two dice are rolled, find the following probabilities: (5 points)

a) P(sum is 8)

b) P(both show odd numbers)

10. If P(E) = 0.30, P(F) = 0.40, and P(E and F) = 0.20, what is P(E | F)? (5 points)

11. If two cards are selected from a standard deck of 52 cards without replacement: (5 points)

a) Find the probability they both are hearts

b) Find the probability they both are the same suit

12. If an instructor has 20 students and wants to pick 4 to help him move some books, how many different ways can the students be picked? (5 points)