Strayer University — Manassas Campus
Quantitative Methods — MAT540

Midterm Exam

This is a take-home (open Text, class-notes & Student Guide) midterm exam. Read carefully the entire exam before attempting to solve any of the problems and then budget your time: do first what you know best. ***Show and submit <u>all your work</u> to justify your answers***; wherever appropriate, identify the given data, the applicable formulae, substitutions and results. Neither collaboration nor use of materials other than the text, class notes or the student guide is permitted; give proper credit to any source or shortcut you may use. By submitting the exam by the **deadline, Wednesday, 02/08/06, 6:15 PM**, you affirm that you have abided by these rules:

....
Student's name

Work through the problems in the following pages and answer all questions.

#	Pts.	Score	Instructor's comment
1	10		
2	10		
3	10		
4	10		
5	10		
6	15		
7	15		
8	20		

Good luck!

(And, may you need none at all!)

-- Attach (staple) this sheet as a cover of your answer sheets. --

Problem 1. (10 points)

Chapter 1, problem 20 (p.25). However, use that hot dogs cost her $0.37 each, and that her stand, other equipment and supplies will cost her a total of $4,200 for the season.

Problem 2. (10 points)

Chapter 1, problem 23 (p.25). However, note that the stated model is *incorrect*: the left-hand sides of the constraints add amounts of material and hours needed! So, develop the correct model, then enforce the net sum labor hours constraint, and then see, by trial-error-and deduction how much of the available material you can use up to maximize the profit..

Problem 3. (10 points)

Chapter 2, problem 6 (p.58). Clearly identify the probability distribution by its general formula, specify the variable(s) and parameter(s), and explain your reasoning for the identification.

Problem 4. (10 points)

Chapter 2, problem 16 (p.59). However, use that the test also had a "conditional pass" bracket, and that 5% of the students from each district passed conditionally. Before answering the question, develop the probability tree, showing marginal, conditional and joint probabilities, and then construct a table of joint probabilities with all marginal probabilities indicated.

Problem 5. (10 points)

Chapter 2, problem 26 (p.61). However, use that the standard deviation of $\sigma = 3$ pounds.

Problem 6. (15 points)

Chapter 3, problem 4 (p.102). However, for *part a*, determine the decision based on minimum regret, in *part b*, the decision based on the Hurwitz criterion with $\alpha = 0.3$, and in *part c*, use the Laplace criterion.

Problem 7. (15 points)

Chapter 3, problem 16 (p.107). However, use that the probabilities for the weather are 45%, 35%, and 20% for 'rain', 'overcast' and 'sunshine', respectively (global warming & el niño…).

Problem 8. (20 points)

Chapter 5, problem 8 (p.219). However, for the exponential smoothing forecasts, use $\alpha = 0.25$, and then $\beta = .30$ for the second, adjusted version.