Problem Set #3

(Due Thursday, February 19 at beginning of lecture)

Economics 310 **Spring 2009**

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1. A quiz has 200 multiple choice questions. For each question, a correct answer is worth one point, but 0.25 points are taken off for each incorrect answer. The chance for you to choose a correct answer for each question is 80%, and the chance is not affected by the result of other questions (that is, your answers to the questions are independent).

   (a) Assume that you solve only one problem, and define a random variable X which is 1 if you got the right answer and 0 if you did not get it right. What are $E(X)$ and $SD(X)$?

   (b) Assume that you solve all 200 questions, and define a random variable Y equal to the total number of right answers. What are $E(Y)$ and $SD(Y)$?

   (c) Lets define a new random variable T as the total points on all 200 questions. Express T as a function of Y. What are $E(T)$ and $SD(T)$?

   (d) What are $Cov(T, Y)$ and $Corr(T, Y)$?

2. VS Chap. 4, Exercise 2

3. VS Chap. 4, Exercise 5

4. VS Chap. 4, Exercise 6

5. VS Chap. 4, Exercise M4