Homework ANCOVA

A reminder – Please do not hand in any unlabeled or unedited SAS output. Include in your write-up only those results that are necessary to present a complete solution (what you want the grader to grade). In particular, questions must be answered in order (including graphs), and all graphs must be fully labeled (main title should include the question number, and all axes should be labeled). Don't forget to put all necessary information (see course policies) on the first page. Include the SAS input for all questions at the very end of your homework; this could be important even though it won't be graded. You will often be asked to continue problems on successive homework assignments so save all your SAS code.

- 1. Refer to the Questionnaire color data set described in Problems 22.9 and 16.8 (CH22PR09.DAT).
 - (a) Generate the scatterplot without the covariate. Does it look like there is any difference between the different levels (colors)? Run the one-way ANOVA without the covariate and present the results of the hypothesis test (normal information). Is your result the same or different as what you saw in the scatterplot.
 - (b) Generate the interaction plot with the covariate. Does it look like there is any interaction between the levels and the covariate? Does it look like there are any differences between the different levels? Run the one-way ANCOVA and present the results of the three different hypotheses tests. Are the results the same or difference from your conclusions with the interaction plot. Does this change the result from part a)?
 - (c) Does the covariate in this example meet the requirements of a covariate?
 - (d) Generate a plot that has fitted lines on the data points. Does the fit look reasonable?
 - (e) If the levels are significant, use LSMEANS to determine which levels are the same and which are different. Which color should the people use to maximize the response rate for the questionnaires?
 - (f) Verify the assumption that there is no interaction between the factors and the covariate by using the appropriate hypothesis test.