MATH 2240 – Problem Set #7   Due Wednesday, October 24

1. In your own words, talk about the similarities and differences between a completely randomized design and a randomized block design.

2. Recall the study of treatments for children's cough symptoms from Problem Set #6. (Use the COUGH dataset.)

   (a) Find, and interpret, individual 95% confidence intervals for the three different treatment means. (So there are three intervals to interpret here.) Do any of these intervals overlap? What might this suggest?

   (b) Find, and interpret, Tukey Simultaneous 95% confidence intervals for the differences of the treatment means. (Again, there are three intervals to interpret.) Based on Tukey's procedure, rank the treatment means.

   (c) Which method for comparing means, (a) or (b), is preferred? Why?

   (d) Write a short paragraph addressed to a general audience that summarizes the results of this study. In particular, can we conclude that honey is *causing* a higher average improvement score? Explain.

3. Do 10.79 on p. 551 (I apologize in advance for this one, but it's the only good problem I could find!). In addition to the four parts in the book, answer the following. (Use the COWS dataset.)

   (e) Why is it reasonable to block by cow?

   (f) In your analysis, you should have found only two of the treatment means to be significantly different. Find, and interpret, a 95% confidence interval for the difference between these two means. (**Hint:** Use Stat→Basic Statistics→2-Sample t… and select summarized data. Use the s from the ANOVA (under Model Summary) for the standard deviation for both samples.)