Instructions:
You may consult with others but develop your own code and answers. Use packages and commands we used in lab for graphing here – artistic license is encouraged but optional. See this week on the class calendar for the data: https://sciences.ucf.edu/biology/d4lab/methods-1. Compute the most appropriate statistical models to match each study. Present your R output (e.g., copy-paste), including any "Call:" model description that comes with "summary(mymodel)". Graphs are expected, especially for tests of model assumptions. Also be sure to explain the results in your own words. Also provide your code, and submit your answers as a pdf, with your name in the file name.

1. Medley and Clements (1998 – see dataset called zinc.txt) studied the effects of zinc pollution on diatom diversity in various Rocky Mountain rivers. Zinc is a heavy metal that pollutes waters as a result of mining. Zinc levels were categorized as background (BACK), low, medium, and high. And different rivers have different levels of other complicating factors. Did zinc pollution levels reduce species diversity, after accounting for the potential effects of being in different rivers? If so, then how much did high Zn levels reduce diversity (compared to background levels)? Briefly discuss the biological meaning of your findings (3 points).

2. Swearingen and Holt (1976 – see dataset called barley.txt) performed an experiment with 4 different varieties of barley to determine whether significant variation in yields existed among the varieties. Barley was planted in random plots that were organized in blocks, where each block contained one replicate of each variety. Did varieties clearly affect yields? If so, how much difference did variety make? Discuss the statistical and biological meaning of your findings (3 points).

3. A study was conducted (possum.txt) to test the hypothesis that opossums that had invaded urban Victoria (British Columbia) were larger than opossums from other locations in their native range (e.g., SE US, and other locations). Analyze skull width (skullW) as a measure of body size. After accounting for sex and age, are Victoria's opossums bigger than those elsewhere? (3 points)

3 pts. each question **+ 1 pt. is for overall clarity of presentation**.