Math 356H Assignment #6

Readings:

- Week 11 (Mar. 24 - Mar. 28). **Non-parametric ANOVA**.
  - (D) Section 15.4.
- Week 12 (Mar. 31 - April 4). **Latin squares and 2^p Factorial Experiments.**
  - (D) The end of Section 11.3 (Latin squares) and Section 11.4. This material will not be on the final exam, but please read it. It will give you an idea of how closely the design of an experiment is connected with its statistical analysis.
  - *Optional*: (NWK) Part V is completely dedicated to Experimental Designs in incredible detail. There is enough material there for a complete course. You may want to skim some of it.

Due date: Friday, April 11 by 2 p.m. Solutions will be posted at that time and ABSOLUTELY NO late assignments will be accepted.

1. Chapter 15, #24.

   Note: The `R` instruction for the Kruskal-Wallis test is kruskal.test(y∼x), where `y` is a vector of data values and `x` is the factor variable describing how the data are divided into groups.

2. Running times (in seconds) for a group of randomly selected males who finished the New York City marathon in a recent year were partitioned into categories with ages 21-29, 30-39 and 40 or older. The Kruskal-Wallis `R` test results were:

   ```
   Kruskal-Wallis chi-squared = 0.58       df = 2       p-value = 0.747
   ```

   What are your conclusions based on the above output?

3. Chapter 15, #26.

   Note: The `R` instruction for the Friedman test is friedman.test(y∼x1|x2), where `y` is a vector of data values, `x1` is the factor variable describing how the data are divided into groups, and `x2` is the blocking variable describing how the data are divided into blocks. The blocking factor is specified in the model formula using the vertical bar (the variable after the bar is the blocking variable).