Math 151, Spring 2011
Jo Hardin, HW #10

Homework due on THURSDAY, MARCH 31^{th}, START OF CLASS.

1. DeGroot (3^{rd} or 4^{th} ed.), section 4.1: # 7, 8, 9, 11

2. DeGroot (3^{rd} or 4^{th} ed.), section 4.2: # 1, 4, 7, 10

3. DeGroot (3^{rd} or 4^{th} ed.), section 4.3: # 6, 7, 8

4. LAKE WOBEGON DICE: Some of you have probably heard of the NPR radio show *A Prairie Home Companion* where Garrison Keillor discusses his supposed childhood home of Lake Wobegon, where "all the women are strong, all the men are good looking, and all the children are above average."

   Consider the following 3 dice (all fair and all 6-sided):
   yellow: { 6, 6, 6, 6, 6, 6 }
   red: { 7, 7, 7, 4, 4, 4 }
   blue: { 7, 7, 7, 7, 1, 1 }

   That is, the yellow die has 6 on each side. The red die has three sides of 7 and three sides of 4. The blue die has four sides of 7 and two sides of 1.

   Consider rolling the three dice and taking their average.

   (a) Find the expected value of the average of the three dice.

   (b) Find the median of the average of the three dice.

   (c) Using (a) and (b) and the quote above, explain why these dice have been named "Lake Wobegon Dice."

   (d) What percent of of the time will you get an average roll which is above average?

   David G. Stork and Jorge Moraleda, "Lake Wobegon Dice," *College Mathematics Journal*, January 2012.