Quantitative Reasoning 28:
The Magic of Numbers

Homework 6

Assigned on February 16
Due at 5:00 p.m. February 18

Please submit problem sets to the boxes outside the Math Department's main office, on the third floor of the Science Center (Room 325).

Reading:

Gross-Harris, Chapter 5

Problems:

Please explain your reasoning and show your work.

1. In the game of Yahtzee, the players roll 5 dice at a time, and the best possible roll is a "yahtzee," which is when all 5 dice come up the same. What is the probability of rolling a yahtzee in one roll? Another valuable roll is the "large straight," where the dice are all in a row (either 1,2,3,4,5 or 2,3,4,5,6). What is the probability of rolling a large straight in one roll?

2. At the annual meeting of the National Elkhound Association, there are 8 propositions on the ballot. Each member may vote "yes," "no," or "abstain" on each proposition, but each ballot can have no more than one abstention. In how many ways can a ballot be cast?

3. How many distinct rearrangements of "MISSISSIPPI" are possible if we don't allow the I's to be all together? What if we don't allow the I's to be all together or the S's to be all together?