Quantitative Reasoning 28:
The Magic of Numbers

Homework 5

Assigned on Monday September 29th
Due at 12 noon Wednesday October 1st

Please submit problem sets at the end of the relevant lecture, or leave in the box labeled QR28 outside the Math Department's main office, on the third floor of the Science Center (Room 325).

Reading:

Gross-Harris, Chapters 4,5

Problems:

Please explain your reasoning and show your work.

1. You roll two standard 6-sided dice. What is the probability that their sum is at least 8? What is the probability that their difference is at least 2? (Hint: there may not be a super-clever way to do this problem).

2. You've come up with the following game to play with a friend. Both players will flip three coins. Whoever gets more heads wins. Of course, it is possible that both players get the same number of heads. In that case, a player chosen beforehand wins the game. In order to make up for this advantage, the tie-winning player only gets one dollar for winning (regardless of whether there was actually a tie or not), while the tie-losing player gets two. Would you rather lose ties, or win them?

3. Suppose that you flip a coin 10 times. Which of the following sequences of heads and tails is more likely?

   (a) THHTTHTHTH
   (b) TTTTTTTTTH

4. Suppose that you flip a coin 10 times. Which is more likely:

(a) You get 5 heads and 5 tails.

(b) You get 2 heads and 8 tails.