

# Quantitative Reasoning 28: The Magic of Numbers

## Homework 6

Assigned on Monday October 1st

**Due at 12 noon Wednesday October 3rd**

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. 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 (and more likely) 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. You and a friend play the following game. You each flip three coins, and whoever gets more heads wins; if you get the same number, you win. If you win, your friend pays you \$1; if your friend wins, you pay her \$2. Who has the better odds?
3. In the game of Phigh, each player rolls three dice; his or her score is the highest number that appears.  
What is the probability of scoring 1?  
What is the probability of scoring 2?  
Your opponent scored 4. What is the probability that you'll win (that is, score 5 of 6)?