Quantitative Reasoning 28:
The Magic of Numbers

Homework 4

Assigned on February 11
Due at 5:00 p.m. February 14

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 4

Problems:

Please explain your reasoning and show your work.

1. On a certain exam with ten questions, a student must answer 7 and omit 3. How many ways can he or she make the choice? Later, the student notices that problem #1 is easy. After doing that problem, how many ways are there to finish the exam?

2. In the small town of New Baden, Illinois, the town council is made up of 10 teachers, 5 firefighters, and 5 police officers. How many ways are there to choose a committee of 7? What if there must be exactly one teacher on the committe? How about at least one teacher on the committee?

3. It's time to look ahead to next season for the Chicago Cubs. Suppose they play 162 games, and suppose that they end up winning 88 of those games. How many possible win/loss records are there? By a win/loss record, I mean a list of which games were won and which were lost. What if we drop the condition that the Cubs win 88 games, and only require that they win more than half of their games? *Hint*: There are three possibilities for a season: win more than half of the games, win fewer than half of the games, and win exactly half of the games. Using this, you should be able to derive a concise solution.