

Quantitative Reasoning 28: The Magic of Numbers

Homework 3

Assigned on February 9

Due at 5:00 p.m. February 11

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 3

Problems:

Please explain your reasoning and show your work.

1. How many fraternity names consisting of 3 Greek letters can be formed? Note: the Greek alphabet contains 24 letters. How many are there if repeated letters are not allowed? What if we allow repeated letters, but exclude names like "Lambda Lambda Lambda" where all three letters are the same?
2. How many 4-digit numbers are divisible by 7? How many are divisible by 11? How many are divisible by neither 7 nor 11? (*Hint*: A number is divisible by both 7 and 11 exactly when it is divisible by 77. Later in the course we'll discuss this issue in more depth.)
3. Suppose the Harvard Texas Club consists of 100 students: 30 from the Houston area, 20 from Dallas/Fort Worth, 20 from San Antonio, and 30 from elsewhere. The Club wishes to elect officers (president, vice president, secretary, and treasurer). How many ways are there to do this? How many choices are there if all of the officers must be from the Houston area? What if at least one of the officers must be from Houston?