Homework 1

Do the problems on webwork and turn the following problems in class on Sept. 3rd.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

Problem 1. You have an 6×6 chessboard and a token in the lower left corner square. You want to move it to the top right corner square.

a) How many ways can you move the token if, in each move you're only allowed to move the token one square to the right or one square up?

b) In how many ways can you move the token if you're additionally allowed to move the token diagonally (in one move you can also move it to the adjacent "up-right" square).

Problem 2. On a lottery ticket you choose and circle five numbers out of the numbers 1, 2, 3, ... ,49, 50. The next day at the lottery five numbers are chosen at random (with all combinations having the same probability) out of the numbers 1, 2, 3, ... ,49, 50. You win the prize if, on your lottery ticket you have guessed exactly three out of these five numbers.

1. How many possible outcomes are there of the drawing?

2. How many ways can three of your numbers be chosen?

3. How many ways can the two numbers not from your list be chosen?

4. How many of the outcomes contain exactly three of your numbers?

5. What is the probability you win the prize?