# MATH 351
Problem Set #1
Due Tuesday, September 4 in class

1. How many different 8-digit reservation codes by an airline are possible if the first two places are occupied by letters, the next three places are occupied by numbers, the sixth place may be a letter or a number, and the last two digits must be letters?

2. How many functions are there from $\{1, 2, \ldots, k\}$ to $\{1, 2, \ldots, n\}$? How many of these are one-to-one?

3. How many different letter arrangements can be formed from the letters of the word MATHEMATICSISCOOL? How many of these do not have two consecutive A's?

4. Consider the grid of points shown here. Suppose that, starting at the point labelled A, you can go one step down, or one step to the left at each move. This procedure is continued until the point labelled B is reached. How many different paths from A to B are possible? How many of these paths do *not* go through point C?
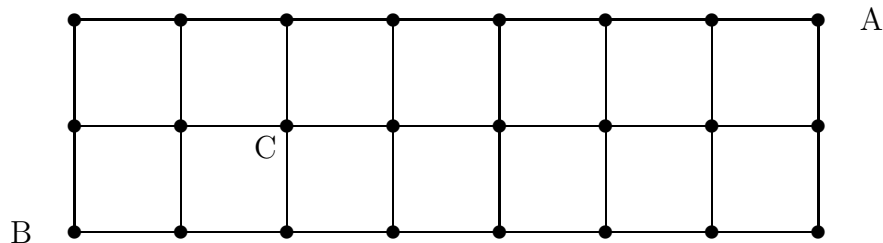
5. If 6 Geometry books, 4 Probability books and 2 Algebra books are to be arranged on a shelf, how many arrangements are possible if books of the same subject must be next to each other?

6. A certain club contains 10 men and 10 women. A six member committee consisting of 2 men and 4 women must be chosen from the club. How many committees are possible? How many committees are possible if Mr. and Mrs. Smith refuse to serve together on the committee?