Intermediate Math Circles
November 6, 2013
Counting I

Problem Set

1. A restaurant menu lists 5 meat dishes and 3 fish dishes.

   a.) How many single course dinners can you order?

   b.) How many dinners can you order that have 1 meat dish and 1 fish dish?

2. How many numbers between 1000 and 9999 have only even digits?

3. A licence plate consists of 4 letters followed by 3 digits. How many different license plates are possible?

4. How many 3 digit numbers are there in which adjacent digits are not the same?

5. In how many ways can 6 people seat themselves in a room with 9 chairs where at most 1 person can sit in each chair?

6. How many permutations of the numbers 1, 2, 3, 4, 5, and 6:

   a.) begin with an even number?

   b.) begin with an odd number and end with an even number?

   c.) begin with an odd number and end with an odd number?

7. How many permutations of the numbers 1, 2, 3, 4, 5, 6, 7, and 8 taken 5 at a time:

   a.) have 7 and 8 in adjacent positions

   b.) have 7 and 8 separated by exactly 1 number

Answers will posted on our website on Friday. If you disagree with an answer, try again. Next Wednesday, difficulties can be taken up in class.

Full solutions will be posted on our website after next Wednesday's class.