Math 4363 - Combinatorics
Homework 1
Due in Class - Thursday 30 January 2020

1. How many different 6 digit numbers can be constructed from the numbers 2, 2, 2, 3, 5, 8, using each number exactly once?

2. How many integers satisfy all of the following properties:

   (a) greater than 5040;

   (b) all the digits are distinct; and

   (c) the digits 2 and 7 do not occur.

3. How many 6 digit numbers are there such that the digits are distinct numbers chosen from the set $\{1, 2, \ldots, 9\}$, and such that the digits 2 and 3 do not appear consecutively in either order.

4. How many ways are there to arrange 7 consonants and 3 vowels such that no two vowels appear consecutively?

5. In how many ways can 4 men and 8 women be arranged around a table so that between every pair of consecutive men sits exactly 2 women?