

Math 5710 Counting Problems

1. Let $A = \{ a, b, c, d, e \}$. How many subsets of S are there?
2. How many ways can you select k objects from a set of n objects and arrange them in order?
3. How many ways can you select k objects from a set of n objects?
4. How many different lottery tickets are there (Idaho, Powerball) ?
5. From a group of 5 women and 7 men, how many different committees consisting of 2 women and 3 men can be formed? What if 2 of the men refuse to serve on the committee together?
6. How many ways can you be dealt a straight in poker? a flush? two pair?
7. Consider a binary code with 4 bits (0 or 1) in each code word. An example of a code word is 0110.
 - a) How many different code words are there?
 - b) How many code words have exactly two zeroes?
 - c) How many code words begin with a zero?
 - d) In a constant ratio binary code, each word has N bits. In every word, M of the N bits are 1 and the other $M - N$ bits are 0 . How many different code words are in the code with $N = 8$ and $M = 3$?