CMSC57 Discrete Mathematical Structures in Computer Science II

Assignment (Discrete Probability)

Problem 1:

What is the probability of these events when we randomly select a permutation of the 26 lowercase letters of the English alphabet?

a) The permutation consists of the letters in reverse alphabetic order.

b) z is the first letter of the permutation.

c) z precedes a in the permutation.

d) a immediately precedes z in the permutation.

e) a immediately precedes m, which immediately precedes z in the permutation.

f) m, n, and o are in their original places in the permutation

Problem 2:

A group of six people play the game of "odd person out" to determine who will buy refreshments. Each person flips a fair coin. If there is a person whose outcome is not the same as that of any other member of the group, this person has to buy the refreshments. What is the probability that there is an odd person out after the coins are flipped once?

Problem 3:

Find the probability that a family with five children does not have a boy, if the sexes of children are independent and if

a) a boy and a girl are equally likely.

b) the probability of a boy is 0.51.

c) the probability that the ith child is a boy is $0.51-(i/100)$