Homework 9: Due Thurs. Nov. 14

Instructor: Tyler Simon

Problem 1:
You are playing darts for an hour and realize you hit the bullseye 30% of the time, so out of 10 darts, 3 will be bullseyes. what is the minimum number of darts would you need to throw to guarantee a 99.999% chance of hitting the bullseye? Show your reasoning.

Problem 2:
How many 4 letter "words" can be made from the following list of letters a, g, m, o, p, r? These don’t actually have to be real words, like "rpmo" would count as a word. Note, order matters and repetition is not allowed.

Problem 3:
You want to take 2 pieces of fruit for lunch. You have 3 bananas, 4 apples and 2 pairs, how many ways can you select 2 pieces of fruit of different types?

Problem 4:
(1) 12 people including Mary and Peter, are candidates to serve on a committee of five. How many different committees are possible?
(2) Of the possible committees, how many contain both Peter and Mary?
(3) How many committees contain neither Peter nor Mary?
(4) How many contain either Peter or Mary?
Problem 5:

(1) A palindrome is a string of digits that reads the same backwards and forwards, like “1001”. How many different palindromes are there with 6 digits? How many with 7 digits?

(2) How many 4 digit numbers less than 6000 can be made using only odd digits?

(3) A computer password contain 6 characters. The first two must be lower case letters and the remaining four can be either digits or lower case letters. How many different passwords are possible.

Problem 6:
What is the conditional probability that a family with two children has two boys, given they have at least one boy? Assume that each of the possibilities \{BB, BG, GB, GG\} is equally likely, where B represents a boy and G a girl.