

Problem 1: Find the total number of ways the game show host can distribute 5000 points to the four distinct teams (A,B,C,D) such that the following hold true:

- Every team receives at least 250 points
- Team A receives at least 1000 points
- Team B receives at most 600 points

Problem 2: Suppose we wish to create an anagram of DRACONIS LUCIUS MALFOY. Counting both the 2 interior spaces and letters as characters, find the total number of ways to arrange the characters such that the following hold true:

- at least 2 of the vowels are consecutive
- the first A comes before the first U
- the last letter is O

Problem 3: Suppose you want to create a new password. The password may consist of uppercase letters, lowercase letters, numbers 0-9, and special characters. Assume there are 9 types of special characters. If the password must be 18 characters in length and repetition is allowed, find the probability of choosing a password such that each of the following conditions are met:

- it does not end with an uppercase letter
- it contains exactly one distinct special character that is not '@' and is not in the 3rd or 4th position
- it contains exactly 3 (single digit) odd numbers that are distinct
- the remainder of the open positions in the password consists of lowercase letters where repetition is allowed