1. The 12-character string "INCONVENIENT" contains ‘E’ 2 times, ‘I’ 2 times and ‘N’ 4 times. The remaining characters occur 1 time each.

   (a) How many 12-character strings are arrangements of this string?

   Ans: \[
   \frac{12!}{4!2!2!} = 4,989,600.
   \]

   (b) How many of the strings in part (a) contain the substring "II"?

   Ans: \[
   \frac{11}{4!2!} = 831,600
   \]

2. How many ways can 41 identical marbles (representing votes) be divided among 5 boxes, each labeled with the name of a different candidate?

   Ans: This is selecting 41 times from a set of 5 elements, with repetition:

   \[
   C(41 + 5 - 1, 41) = \frac{45!}{4!41!} = 148,995
   \]