You do not have to simplify numerical answers, but you must present your final answer using only numbers and the operations of addition, subtraction, multiplication, division, powers and factorials.

1. The 10-character string "STATISTICS" contains ‘I’ 2 times, ‘S’ 3 times and ‘T’ 3 times. The remaining characters occur 1 time each.

   (a) How many 10-character strings are arrangements of this string?

   Ans: \[
   \frac{10!}{3!3!2!} = 50,400.
   \]

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

   Ans: \[
   \frac{9}{3!3!} = 10,080
   \]

2. How many ways can 43 identical marbles (representing votes) be divided among 5 boxes, each labeled with the name of a different candidate?

   Ans: This is selecting 43 times from a set of 5 elements, with repetition:

   \[
   C(43 + 5 - 1, 43) = \frac{47!}{4!43!} = 178,365
   \]