Suppose a string of $n$ bits is sent across a lossy link. In how many ways can 2 bit errors occur? When $n=3$, list the possible set of bit error patterns.

How many 3 digit numbers can you make using the digits 1, 2 and 3 without repetition? How many 2 digit numbers can you make using the digits 1, 2, 3 and 4 without repetition?

From a group of 8 professors and 9 students and admissions committee consisting of 5 professors and 3 students is to be formed. How many different committees are possible?

How many ways can 12 people be seated in a row if:

(i) There are no restrictions on the seating arrangement?
(ii) Two of the people A and B refuse to sit together?
(iii) Two of the people A and B must sit together?

Consider an array $x$ of integers with $k$ elements, where each element has a distinct integer value between 1 and $n$ inclusive and the array is sorted in increasing order i.e. $x[1]<x[2]<x[3]$ .... When $k=2$ how many such sorted arrays are possible?