

PERMUTATIONS

1. find the value $1) {}^{2024}C_2 / 2023$
2. find n If $n(n-1)(n-2)(n-3)(n-4) / 5 = 24$
3. find the value of ${}^{2024}C_0 + {}^{2023}C_0 + {}^{2022}C_0 + \dots + {}^2C_2 + {}^1C_1$
4. If ${}^{2024}C_{2n+2} = {}^{2024}C_{8-k}$ find k
5. If ${}^{17}C_{x-3} = {}^{17}C_{95}$ find x
6. If ${}^{59}C_{32} = x + {}^{59}C_{27}$, find the value of $2n+3$.
7. find the value of ${}^{2024}C_{2022} / {}^{2024}C_2$
8. If ${}^{17}C_{11} / {}^{17}C_6 = x$, then find the value of $14x-3$.
9. If ${}^{17}C_{11} + {}^{17}C_{12} = xC_{12}$ find the value of $\sqrt{2x}$.
10. If ${}^{15}C_9 + {}^{15}C_{10} = {}^{16}C_k$ find the sum of all possible value of k
11. find the value of ${}^8C_8 + {}^8C_7 + \dots + {}^8C_1 + {}^8C_0$
12. find the value of ${}^{10}C_{10} + {}^{10}C_8 + {}^{10}C_6 + {}^{10}C_4 + {}^{10}C_2$
13. find the value of ${}^{2024}C_{2024} + {}^{2024}C_{2022} + \dots + {}^{2024}C_0 / {}^{2023}C_{2023} + {}^{2023}C_{2021} + {}^{2023}C_{2019} + \dots + {}^{2023}C_1$
14. find the value of n If ${}^{100}C_0 + {}^{100}C_1 + {}^{100}C_2 + \dots + {}^{100}C_{100} = 2n$

❖ WORD PROBLEM

1. A candidate is required to answer 7 questions out of 12 questions, which are divided into two groups, each containing 6 questions. He is not permitted to attempt more than questions from either group. Find the number of different ways of doing questions.
2. On of 18 points in a plane, no three are in the same line except five points which are collinear. Find the number of lines that can be formed joining the points.
3. We wish to select 6 persons from 8, but if the person A is chosen then B must be chosen. In how many ways can selections be made?
4. How many automobile license plates can be made if each plate contains two different letters followed by three different digits?
5. Find the number of permutations of n distinct things taken together, in which 3 particular things must occur together.
6. Find the number of positive integers greater than 6000 and less than 7000 which are divisible by 5, provided that no digit is to be repeated.
7. There are 10 persons named $P_1, P_2, P_3, \dots, P_{10}$. Out of 10 persons, 5 persons are to be arranged in line such that in each arrangement P_1 must occur whereas P_4 and P_5 do not occur. Find the number of such possible arrangements.
8. There are 10 lamps in a hall. Each one of them can be switched on independently. Find the number of ways in which the hall can be illuminated.
9. A box contains two white, three black and four red balls. In how many ways can three balls we drawn from the box, if atleast one black ball is to be included in the draw.
10. Find the number of integers greater than 7000 then can be formed with the digits 3,5,7,8 and 9 where no digit is repeated.
11. If 20 lines are drawn in plane such that no two of them are parallel and no three are concurrent, in how many points will they intersect each other?
12. In a certain city, all telephone numbers have six digits, the first two digits always being 41 or 42 or 46 or 62 or 64. How many telephone numbers have all six digits distinct?

13. In an examination, a student has to answer 4 questions out of 5 questions; questions 1 and 2 are however compulsory. Determine the number of ways in which the student can make the choice.
14. 18 mice were placed in two experimental groups and one control group, with all groups equally large. In how many ways can the mice be placed into three groups?
15. A bag contains six white marbles and five red marbles. Find the number of ways in which four marbles can be drawn from the bag if
- (i) they can be of any colour
 - (ii) two must be white and two red and
 - (iii) they must all be of the same colour.
16. In how many ways can a football team of 11 players be selected from 16 players? How many of them will
- (i) include 2 particular players?
 - (ii) exclude 2 particular players?
17. A sports team of 11 students is to be constituted, choosing at least 5 from Class XI and at least 5 from Class XII. If there are 20 students in each of these classes, in how many ways can the team be constituted?
18. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if the team has
- (i) no girls
 - (ii) at least one boys and one girl
 - (iii) at least three girls
19. How many numbers greater than 1000000 can be formed by using the digits 1, 2, 0, 2, 4, 2, 4? **[NCERT]**
20. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together? **[NCERT]**
21. Find the total number of permutations of the letters of the word 'INSTITUTE'. **[NCERT]**

❖ BASED ON LOTS

1. The letters of the word 'SURITI' are written in all possible orders and these words are written out as in a dictionary. Find the rank of the word 'SURITI'.
2. In how many ways can the letters of the word 'ALGEBRA' be arranged without changing the relative order of the vowels and consonants?
3. How many words can be formed with the letters of the word 'UNIVERSITY', the vowels remaining together?
4. Find the total number of arrangements of the letters in the expression $a^3 b^2 c^4$ when written at full length.
5. How many words can be formed with the letters of the word 'PARALLEL' so that all L's do not come together?
6. How many words can be formed by arranging the letters of the word 'MUMBAI' so that all M's come together?
7. How many numbers can be formed with the digits 1, 2, 3, 4, 3, 2, 1 so that the odd digits always occupy the odd places?
8. How many different signals can be made from 4 red, 2 white and 3 green flags by arranging all of them vertically on a flagstaff?
9. How many number of four digits can be formed with the digits 1, 3, 3, 0?
10. In how many ways can the letters of the word 'ARRANGE' be arranged so that the two R's are never together?
11. How many different numbers, greater than 50000 can be formed with the digits 0, 1, 1, 5, 9.
12. How many words can be formed from the letters of the word 'SERIES' which start with S and end with S?
13. How many permutations of the letters of the word 'MADHUBANI' do not begin with M but end with I?
14. Find the number of numbers, greater than a million, that can be formed with the digits 2, 3, 0, 3, 4, 2, 3.
15. There are three copies each of 4 different books. In how many ways can they be arranged in a shelf?
16. How many different arrangements can be made by using all the letters in the word 'MATHEMATICS'. How many of them begin with C? How many of them begin with T?

LOYAL EDUCATION MATHEMATICS

Result Oriented

(DAILY PRACTICE PAPER)

[CLASS XI]

17. A biologist studying the genetic code is interested to know the number of possible arrangements of 12 molecules in a chain. The chain contains 4 different molecules represented by the initials A (for Adenine), C (for Cytosine), G (for Guanine) and T (for Thymine) and 3 molecules of each kind. How many different such arrangements are possible?
18. In how many ways can 4 red, 3 yellow and 2 green discs be arranged in a row if the discs of the same color are indistinguishable? [NCERT]



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