MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

PERMUTATIONS

Solved Examples And Exercises

1. Find the number of ways in which 5 boys and 5 girl be seated in a row so that (i)No two girls may sit together (ii)All the girls sit together (iii)all the boys sit together. (iv)All the girls are never together.

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2. Five boys and five girls form a line with the boys and girls alternating. Find the number of ways of making the line when all girls are together.

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3. How many even numbers are there with three digits such that if 5 is one of the digits, then 7is the next digit?

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4. How many four digit numbers divisible by 4 can be made with the digits 1, 2, 3, 4, 5 if the repetition of digits is not allowed?

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5. Find the number of arrangements of the letters of the INDEPENDENCE. In how many of these arrangements, (i) do the words start with P (ii) do all the vowels always occur together (iii) do the vowels never occur together (iv) do the words begin with I and end in P?

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6. (i) How many different words can be formed with letters of the word 'SUNDAY' ? (ii)How many of the words begin with N? (iii)How many begin with N and end Y?

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7. In how many ways three girls and nine boys can be seated in two vans, each having numbered seats, 3 in the front and 4 at the back? How many seating arrangements are possible if 3 girls sit together in a back row on adjacent seats?

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8. A tea party is arranged for 16 persons along two sides of a long table with 8 chairs on each side. Four persons wish to sit on one particular and two on the other side. In how many ways can they be seated?

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9. In how many ways can the letters of the word PERMUTATIONS be arranged if the (i) words start with P and end with S, (ii) vowels are all together, (iii) there are always 4 letters between P and S?

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10. Number of ways in which a lawn-tennis mixed double be made from seven married couples if no husband and wife play in the same set is a. 240 b. 420 c. 720 d. none of these

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11. The number of different of different ways in which 8 persons can stand in a row so that between two particular persons A and B there are always two persons, is

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12. Prove that 33! is divisible by 2^{15}. what is the largest integer n such that 33! is divisible by 2^n.

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13. Prove that $(n!)^2 < n^n n! < (2n)!$, for all positive integers n.

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14. Prove that $(n! + 1)$ is not divisible by any natural number between 2 and n

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15. Prove that: $\frac{(2n)!}{n!} = \{1.\ 3.\ 5(2n-1)\}2^n.$

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16. If $\frac{n!}{2!(n-2)!}$ and $\frac{n!}{4!(n-4)!}$ are in the ratio $2:1$, find the value of n.

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17. Find n, if $(n+2)! = 2550 \times n!$ (ii) $(n+1)! = 12 \times (n-1)!$

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18. If $\frac{1}{9!} + \frac{1}{10!} = \frac{x}{11!}$, find x.

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19. If $\frac{(2n)!}{3!(2n-3)!} and \frac{n!}{2!(n-2)!}$ are in the ratio $44:3$, find n.

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20. How many permutations of the letters of the word MADHUBANI do not begin with M but end with I ?

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21. Find the probability that in a random arrangement of the letters of the word 'UNIVERSITY' the two I's come together.

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22. 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?

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23. If the letters of the word 'MOTHER' are written in all possible orders and these words are written out as in a dictionary, find rank of the word 'MOTHER'.

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24. In how many ways can the letters of the word PERMUTATIONS be arranged if the (i) words start with P and end with S, (ii) vowels are all together, (iii) there are always 4 letters between P and S?

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25. In how many ways can the letters of the word PERMUTATIONS be arranged if the

(i) words start with P and end with S,

(ii) vowels are all together,

(iii) there are always 4 letters between P and S?

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26. (i) How many different words can be formed with letters of the word 'SUNDAY' ? (ii)How many of the words begin with N? (iii)How many begin with N and end Y?

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27. How many words can be formed using the letter A thrice, the letter B twice and the letter C thrice?

A. $\frac{8!}{3!2!3!}$.

B. $(8!)$.

C. $\frac{8!}{3!3!3!}$.

D. None of these

Answer: A

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28. How many 4 letters words can be formed using the letters of the words '$INEFFECTIVE$'

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29. m men and n women are to be seated in a row so that no two women sit together. If $(m > n)$ then show that the number of ways in which they can be seated as $\frac{m!(m+1)!}{(m-n+1)!}$.

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30. A gentle man want to invite six friends. In how many ways and he send invitation cards to them, if he has three servants to carry the cards.

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31. How many three-digit numbers more than 600 can be formed by using the digits 2, 3, 4, 6, 7.

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32. How many numbers between 3000 and 4000 can be formed form the digits 3, 4, 5, 6, 7 and 8, no digit being repeated in any number?

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33. How many numbers divisible by 5 and lying between 4000 and 5000 can be formed from the digits 4, 5, 6, 7 and 8.

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34. A room has 6 doors. In how many ways can a man enter the room through one door and come out through a different door?

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35. In a monthly test, the teacher decides that there will be three questions, one from each of Exercises $7, 8 and 9$ of the text book. If there are 12 questions in Exercise $7, 18$ in Exercise $8 and 9$ in Exercise 9 , in how many ways can three questions be selected ?

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36. There are 6 multiple choice questions in an examination. How any sequence of answers are possible, if the first three questions have 4 choices each and the next three have 5 each?

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37. How many numbers are there between 100 and 1000 in which all the digits are distinct?

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38. How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming that (i) repetition of the digits is allowed? (ii) repetition of the digits is not allowed?

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39. How many numbers greater than 1000, but not greater than 4000 can be formed with the digits 0, 1, 2, 3, 4 if: (i) repetition of digits is allowed? (ii) repetition of digits is not allowed?

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40. How many different signals can be given using any number of flags from 5 flags of different colours?

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41. In how many ways can the letters of the word 'INTERMEDIATE' be arranged so that: the vowels always occupy even places? the relative order of vowels and consonants do not alter?

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42. Find the total number of ways in which six $'+'$ and four $'-'$ signs can be arranged in a line such that no two $'-'$ signs occur together.

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43. In how many ways can the letters of the word 'INTERMEDIATE' be arranged so that: the vowels always occupy even places? the relative order of vowels and consonants do not alter?

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44. If the letters of the word 'MOTHER' are written in all possible orders and these words are written out as in a dictionary, find rank of the word 'MOTHER'.

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45. The remainder when $1! + 2! + 3! + 4! + ... + 1000!$ is divided by 10 is

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46. 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 a Adenine), C (for Cytosine), G (for Guanine) and T (for Thymine) and 3 molecules of each kind. How many different such arrangements are possible?

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47. If the letters of the word 'LATE' be permuted and the words so performed be arranged as in a dictionary, find rank of the word LATE.

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48. If the letters of the word 'MOTHER' are written in all possible orders and these words are written out as in a dictionary, find rank of the word 'MOTHER'.

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49. If the letters of the word 'LATE' be permuted and the words so performed be arranged as in a dictionary, find rank of the word LATE.

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50. Five persons entered the lift cabin on the ground floor of an 8-floor house. Suppose each of them can leave the cabin independently at any floor beginning with the first. Find the total number of ways in which each of the five persons can leave the cabin (i) at any one of the 7 floors (ii) at different floors.

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51. In how many ways first and second rank in mathematics, first and second rank in physics, first rank in chemistry, and first rank in English be given away to a class of 30 students.

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52. How many numbers are there between 100 and 1000 which have exactly one of their digits as 7?

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53. For a set of five true/false questions, no student has written all correct answers, and no two students have given the same sequence of answers. What is the maximum number of students in the classes, for this to be possible?

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54. How many numbers are there between 100 and 1000 which have exactly one of their digits as 7?

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55. In how many ways can 3 prizes be distributed among 4 boys, when

(i) no boy gets more than 1 prizes ,

(ii) a boy may get any number of prizes,

(iii) no boy gets all the prizes?

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56. A telegraph has 5 arms and each arm is capable of 4 distinct positons, including the position of rest. What is the total number of signals that can be made?

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57. There are four parcels and five post-offices. In how many different ways can the parcels be sent by registered post?

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58. A mint prepares metallic calendars specifying months, dates and days in the form ofmonthly sheets (one plate for each month). How many types of February calendars should it prepare toserve for all the possibilities in the future year ?

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59. A die is tossed thrice. Find the probability of getting an odd number at least once.

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60. Find the total number of ways in which 20 balls can be put into 5 boxes so that first box contains just one ball.

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61. Find the number of 4 digit numbers that can be formed using the digits 1,2,3,4,5 if no digit is repeated. How many of these will be even?

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62. How many four digit natural numbers not exceeding the number 4321 can be formed using the digits1,2,3,4, if repetition is allowed?

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63. How many different numbers of six digits each can be formed from the digits 4, 5, 6, 7, 8, 9 when repetition of digits is not allowed?

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64. Serial numbers for an item produced in a factory are to be made using two letters followed by four digits (0 to 9). If the letters are to be taken from twenty six letters of English alphabet without repetition and the digits are also not repeated in a serial number, how many serial numbers are possible?

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65. From among the 36 teachers in a college, one principal, one vice-principal and the teacher-incharge are to be appointed. In how many

ways can this be done?

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66. In how many ways can 6 persons stand in a queue?

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67. There are five books on Mathematics and 6 books on Physics in a book shop. In how many ways can a student buy : (i) a Mathematics book and a Physics book (ii) either a Mathematics book or a Physics book?

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68. Seven athletes are participating in a race. In how many ways can the first three prizes be won?

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69. If a group of n distinct objects, the number of arrangements of 4 object is 12 times the number of arrangements of 2 objects, then the number of objects is (a)10 (b) 8(c) 6(d) none of these

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70. If the letters of the word 'MOTHER' are written in all possible orders and these words are written out as in a dictionary, find rank of the word 'MOTHER'.

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71. In a room there are 12 bulbs of the same wattage, each having separate switch. The number of ways to light the room with different amounts of illumination is (a)12^2-1 (b) 2^{12} (c) $2^{12}-1$ (d) none of these

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72. How many different signals cab be given using any number of flags from 5 flags of different colours?

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73. It is required to seat 5 men and 4 women in a row so that the women occupy the even places. How many such arrangements are possible?

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74. If $P(n, 4) = 20 \times P(n, 2),$ then find n

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75. If $P(n, 4) = 20 \times P(n, 2)$find n

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Watch Video Solution

77. If $P(n, 4) = 20 \times P(n, 2)$,find n.

Watch Video Solution

78. In how many ways can 6 persons stand in a queue?

Watch Video Solution

79. Seven athletes are participating in a race. In how many ways can the first three prizes be won?

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80. If $22P_{r+1} :^{20} P_{r+2} = 11:52$,find r

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81. If $(2n+1)P_{n-1} :^{2n-1} P_n = 3:5$,find n.

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82. Find the number of arrangements of the letters of the INDEPENDENCE. In how many of these arrangements, (i) do the words start with P (ii) do all the vowels always occur together (iii) do the vowels never occur together (iv) do the words begin with I and end in P?

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83. In how many ways can the letters of the word PENCIL be arranged so that (i) N is always next to E ? (ii) $NandE$ are always together?

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84. How many 4-letter word, with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?

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85. If P_m stands for m_{P_m} , then prove that: $1+1.\ P_1+2.\ P_2+3.\ P_3+\ +n\dot{P}_n=(n+1)!$

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86. In an examination hall there are four rows of chairs. Each row has 8 chairs one behind the other. There are two classes sitting for the examination with 16 students in each class. It is desired that i each row, all students belong to the same class and that no two adjacent row are allotted to the same class. In how many ways can these 32 students be seated?

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87. The sum of all 4 digit numbers that can be formed by using the digits 2, 4, 6, 8. (repetition of digits not being allowed) is

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88. If $P(15, r-1) : P(16, r-2) = 3:4$, find r.

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89. If ${}^{n+5}P_{n+1} = \frac{11(n-1)}{2} {}^{n+3}P_n$, find n.

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90. How many words, with or without meaning, can be formed by using the letters of the word 'TRIANGLE'?

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91. If a denotes the number of permutations of $(x+2)$ things taken all at a time, b the number of permutations of x things taken 11 at a time and c the number of permutations of $x-11$ things taken all at a time such that $a = 182bc$, find the value of x.

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92. In how many ways can 9 examination papers arranged so the best and the worst papers are never together?

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93. How many words can be formed with the letters of the words 'ORDINATE' so the vowels occupy odd places?

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94. A code word is to consist of two distinct English alphabets followed by two distinct number from $1 \to 9$. for example, $CA23$ is a code word. How many such code words are there? How many of them end with an even integer?

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95. In how many ways can 5 children the arranged in a row such that two of them, Ram and Shyam, are always together? two of them, Ram and Shyam, are never together?

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96. How many words can be formed from the letters of the word, TRIANGLE? How many of these will begin with T and end with E?

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97. (i) How many different words can be formed with letters of the word 'SUNDAY' ? (ii)How many of the words begin with N? (iii)How many begin with N and end Y?

Watch Video Solution

98. In how many ways can 5 girls and 3 boys be seated in a row so that no two boys are together?

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99. How many words can be formed with the letters of the words 'ORDINATE' so the vowels occupy odd places?

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100. When a group photograph is taken, all the seven teachers should be in the first row and all the twenty students should be in the second row. If the two corners of the second row are reserved for the two tallest students, interchangeable only between them, and if the middle seat of the front row is reserved for the Principal, how many arrangements are possible?

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101. In a class of 10 students there are 3 girls A, B, C. In how many different ways can they be arranged in a row such that no two of the girls are consecutive.

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102. Compute: $\frac{20!}{18!}$

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103. Compute: $\frac{10!}{6!10!}$

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104. Convert the following products into factorial: 6.7.8.9.10

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105. Convert the following products into factorial: 2.4.6.8

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106. Find the LCM of 4! 5! and 6!

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107. Compute: $\frac{30!}{28!}$

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108. Compute: $\frac{11! - 10!}{9!}$

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109. Prove that: $\frac{1}{9!}+\frac{1}{10!}+\frac{1}{11!}=\frac{122}{11!}$

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110. Find x in each of the following: $\frac{1}{4!}+\frac{1}{5!}=\frac{x}{6!}$

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111. Find x in each of the following: $\frac{x}{10!}=\frac{1}{8!}+\frac{1}{9!}$

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112. Find x in each of the following: $\frac{1}{6!}+\frac{1}{7!}=\frac{x}{8!}$

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113. Convert the following products into factorial: $5.\ 6.\ 7.\ 8.\ 9.\ 10$

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114. Convert the following products into factorial: 3.6.9.1.15.18

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115. Convert the following products into factorial: $(n+1)(n+2)(n+3)\ldots\ldots(2n)$

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116. Convert the following products into factorial: $1.\ 3.\ 5.\ 7.\ 9(2n-1)$

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117. Which of the following are true: $(2+3)!=2!+3!$

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118. Which of the following are true: $(2 \times 3) \neq 2! \times 3!$

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119. Prove that: $n!(n+2) = n! + (n+1)!$

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120. if $(n+2)! = 60[(n-1)!]$, find n

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121. If $(n+1)! = 90[(n-1)!]$, fin d n

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122. If $(n+3)! = 56[(n+1)!$ fin n

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123. Prove that $\frac{(2n)!}{n!} = 2^n\{1.\,3.\,5(2n-1)\}$

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124. There are 3 candidates for a classical, 5 for a Mathematical,, and 4 for a Natural science scholarship. In how many ways can these scholarships be awarded? In how many ways one of these scholarships be awarded?

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125. The flag of a newly formed forum is in the form ... of three blocks, each to be coloured differently. If there are six different colours on the

whole to choose from how man such designs are possible.

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126. Find the number of 4 letter words, with or without meaning which can be formed out of the letters the words ROSE, when The repetition of the letters is not allowed The repetition of the letters is allowed.

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127. Given 4 flags of different colours, how many different signals can be generated, if a signal requires the use of 2 flags one below the other?

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128. Find the number of different signals that can be generated by arranging at least 2 flags in order (one below the other) on a vertical staff, if five different flags are available.

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129. How many words (with or without meaning) of three distinct letters of the English alphabets are there?

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130. Find the total number of ways of answering 5 objective type questions, each question having 4 choices.

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131. How many three digit numbers can be formed without using the digits 0,2,3,4,5 and 6?

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132. How many numbers are there between 100 and 1000 consists such that every digit is either 2 or 9?

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133. How many numbers are there between 100 and 1000 such that 8 is the unit's place.

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134. How any three digit odd numbers can be formed by using the digits 1,2,3,4,5,6 if; The repetition of digits is not allowed? The repetition of digits is allowed?

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135. How many 3-digit even number can be formed form the digits 1,2,3,4,5,6 if the digits can be repeated?

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136. How many numbers of 3 digits can be formed with the digits 1,2,3,4,5 when digits may be repeated?

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137. Find the number of numbers of 5 digits than can be formed with the digits 0,1,2,3,4 if the digits can be repeated in the same number.

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138. How many 4-digit numbers are there when a digit may be repeated an number of times?

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139. How many three letter words can be formed using a, b, c, d, e if Repetition is not allowed ii. repetition is allowed?

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140. In how many ways 5 rings of different types can be worn in 4 fingers?

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141. In how many ways can 5 letters be posted in 4 letter boxes?

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142. A mint prepares metallic calendars specifying months, dates and days in the form of monthly sheets (one plate for each month). How many types of February calendars should it prepare to serve for all the possibilities in the future years?

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143. Find the total number of ways in which n distinct objects can be put into two different boxes.

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144. Fin the total number of way in which n distinct objects can be put into two different boxes

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145. By using the digits 0,1,2,3,4 and 5 (repetitions not allowed) numbers are formed by using any number of digits. Find the total number of non-zero number that can be formed.

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146. In a class there are 27 boys and 14 girls. The teacher wants to select 1 boy and 1 girl to represent the class in a function. In how many ways can the teacher make this selection?

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147. A person wants to buy one fountain pen, one ball pen and one pencil from a stationery shop. If there are 10 fountain pen verities, 12 ball pen varieties and 5 pencil varieties in how many ways can he select these articles?

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148. From Goa to Bombay there are two roots; air, and sea. From Bombay to Delhi there are there routes air, rail and road. From Goa to Delhi via Bombay, how many kinds of routes are there?

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149. A coin is tossed five times and outcomes are recorded. How many possible outcomes are there?

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150. In how many ways can an examinee answer a set of ten true/false type questions?

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151. A letter lock consists of three rings each marked with 10 different letters. In how many ways it is possible to make an unsuccessful attempt to open the lock?

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152. There are 6 multiple choice questions in an examination. How many sequences of answers are possible, if the first three questions have 4 choices each and the next three he 2 each?

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153. Given 7 flags of different colours, how many different signals can be generated if a signal requires the use of two flags, one below the other?

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154. A team consists of 6 boys and 4 girls and other has 5 boys and 3 girls. How many single matches can be arranged between the two teams when a boy plays against a boy and a girl plays against a girl?

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155. Find the 16 th terms of an AP whose first term is 3 and the common difference is 2.

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156. How many three digit numbers are there with no digit repeated?

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157. How many three –digit numbers are there?

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158. How many different five –digit number licence plates can be made if First digit cannot be zero and the repetition of digits is not allowed, The first digit cannot be zero, but the repetition of digits is allowed?

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159. How many four –digit numbers can be formed with the digits 3,5,7,8,9 which are greater than 7000, if repetition digits is not allowed?

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160. How many four digit numbers can be formed with the digits $3, 5, 7, 8, 9$ which are greater than 8000, if repetition of digits is not allowed?

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161. How many 3 digit numbers are there, with distinct digits, with each digit odd?

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162. How many different numbers of six digits can be formed from the digits $3, 1, 7, 0, 9, 5$ when repetition o digits is not allowed?

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163. A number lock on a suitcase has three wheels each labelled with ten digits 0 to 9. If opening of the lock is a particular sequence of three digits with no repeats, how many such sequences will be possible? Also, find the number of unsuccessful attempts to open the lock.

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164. How many numbers of six digits can be formed from the digits $0, 1, 3, 5, 7$ and 9 when no digit is repeated? How many of them are divisible by 10?

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165. If three six faced die each marked with numbers 1 to 6 on six faces, are thrown find the total number of possible outcomes.

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166. A coin is tossed three times and the outcomes are recorded. How many possible outcomes are there? How many possible outcomes if the coin is tossed four times? Five times? n times?

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167. How many numbers of four digits can be formed with the digits $1, 2, 3, 4, 5$ if the digits can be repeated in the same number?

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168. How many three digits numbers can be formed by using the digits $0, 1, 3, 5, 7$ while each digit may be repeated any number of times?

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169. How many natural numbers less than 1000 can be formed form the digits $0, 1, 2, 3, 4, 5$ when a digit may be repeated any number of times?

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170. How many five digit telephone numbers can be constructed using the digits 0 to 9. If each numbers starts with 67 and no digit a appears

more than once?

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171. Find the number of ways in which 8 distinct toys can be distributed among 5 children.

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172. Find the number of ways in which one can post 5 letters in 7letter boxes.

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173. In how many ways can 5 different balls be distributed among three boxes?

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174. In how many ways can 7 letters be posted in 4 letter boxes?

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175. In how many ways can 4 prizes be distributed among 5 students, when No student gets more than one prize? A student may get any number of prizes? No student gets all the prizes?

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176. 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.

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177. Evaluate the following: ${}^{5}P_{3}$

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178. Evaluate the following: 15_{P_3}

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179. Evaluate the following:5_{P_5}

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180. if $5_{p_r} = 6_{p_{r-1}}$ find r.

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181. If $10_{P_r} = 5040,$ find the value of r.

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182. If $\hat{} \ 0P_5 + 5^9P_4 = {}^{10} P_r,$ find the value of r.

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183. Prove the following: $P(n, n) = 2P(n, n-2)$

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184. Prove the following: $P(n, r) = P(n-1, r) + r\dot{P}(n-1,\ r-1)$

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185. Prove the following: $n_{P_n} = n_{P_{n-1}}$

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186. Prove the following: $P(n, r) = n\dot{P}(n-1,\ r-1)$

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187. In how many ways three different rings can be worn in four fingers with at most one in each finger?

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188. How many different signals can be made by 5 flags from 8 flags of different colours?

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189. Three men have 4 coats, 5 waist coats and 6 caps. In how many ways can they wear them?

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190. How many numbers lying between 100 and 1000 can be formed with the digits 1,2,3,4,5 if the repetition of digits is not allowed?

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191. How many four digit numbers are there with distinct digits?

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192. In how many ways 7 pictures can be hung from 5 picture nails on a wall?

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193. The number of natural numbers smaller than 10^4 of which all digits are different, is

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194. How many words, with or without meaning, can be formed using all the letters of the word EQUATION, using each letter exactly once?

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195. Ten different letters of an alphabet are given. Words with five letters are formed from these given letters. Determine the number4 of words which have at least one letter repeated.

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196. Evaluate each of the following: ${}^{8}P_{3}$

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197. Evaluate each of the following: ${}^{10}P_{4}$

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198. Evaluate each of the following: $P(6, 4)$

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199. If $P(5, r) = P(6, r-1),\ f \in d\, r.$

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200. If ${}^{n}P_4 = 360,$ find the value of $n.$

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201. If $P(9, r) = 3024,$ find $r.$

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202. If $P(11, r) = P(12, r-1)$ find n.

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203. If $P(n-1,\ 3) : P(n, 4) = 1 : 9$ find n

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204. If ${}^{2n-1}P_n : {}^{2n+1}P_{n-1} = 22 : 7$, find n.

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205. If $P(n, 5) : P(n, 3) = 2 : 1$ find n

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206. Prove that:

$P(1, 1) + 2.\ P(2, 2) + 3.\ P(3, 3) + \ + n\dot{P}(n, n) = P(n + 1,\ n + 1) - 1.$

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207. In how many ways can five children stand in a queue?

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208. From among the 36 teachers in a school, one principal and one vice principal are to be appointed. In how many ways can this be done?

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209. Four letters E, K, S an V, one in each, were purchased from a plastic warehouse. How many ordered pairs of letters, to be sued as initials, can be formed from them?

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210. Four books, one each in Chemistry, Physics, Biology and Mathematics, are to be arranged in a shelf. In how many ways can this be done?

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211. Find the number of different 4-leter words, with or without meaning, that can be formed from the letters of the word NUMBER.

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212. How many 3 digit numbers are there, with distinct digits, with each digit odd?

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213. How many words, with or without meaning, can be formed by using all the letters of the word DELHI using each letter exactly once?

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214. There are two works each of 3 volumes and two works each of 2 volumes; In how many ways can the 10 books be placed on a shelf so that the volumes of the same work are not separated?

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215. There are 6 items in column A and 6 items in column B. A student is asked to match each item in column A with an item in column B. How many possible, correct or incorrect, answer are there to this question?

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216. How many three digit numbers are there, with no digit repeated.

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217. How many 6-digit telephone numbers can be constructed with digits 0,1,2,3,4,5,6,7,8,9 if each number starts with 35 and no digit appears more than once?

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218. In how many ways can 6 boys and 5 girls be arranged for a group photograph if the girls are to sit on chairs in a row and the boys are to stand in a row behind them?

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219. How many 3-digit even numbers can be made using the digits 1,2,3,4,5,6,7 if no digits is repeated?

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220. How many 3-digit numbers can be formed by using the digits 1 to 9 if no digit is repeated?

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221. Find the numbers of 4-digit numbers that can be formed using the digits, 1,2,3,4,5 if no digit is repeated ? How many of these will be even?

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222. How many words can be formed form the letters of the word DAUGHTER so that The vowels always come together? The vowels never

come together?

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223. The Principal wants to arrange 5 students on the platform such that the boy SALIM occupies the second position and such that the girl. SITA is always adjacent to the girl RITA. How many such arrangements are possible?

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224. How many numbers between 400 and 1000 can be formed with the digits 0,2,3,4,5,6 I no digit is repeated in the same number?

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225. In how many ways can the letters of the word FAILURE be arranged so that the consonants may occupy only odd positions?

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226. How many words can be formed from the letters of the word SUNDAY? How many of these begin with D?

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227. How many words can be formed out of the letters of the word, ORIENTAL, so that the vowels always occupy the odd places?

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228. How many words can be formed out of the letters of the word, ARTICLE, so that vowels occupy even places?

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229. How many words (with or without dictionary meaning) can be made from the letters in the word MONDAY, assuming that no letter is repeated , if 4 letters are used at a time? All letters are used at a time? All letters are used but first is vowel?

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230. How many three letter words can be made using the letters of the word ORIENTAL?

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231. How many different words can be formed with the letters o the word MISSISSIPPI? In how many of these permutations four I's do not come together?

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232. How many permutations of the letters so the word APPLE are there?

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233. Find the number of different permutations of the letters of the word BANANA?

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234. How many different words can be formed by using all the letters of the word ALLAHABAD? In how many of them vowels occupy the even positions? In how many of them both L do not come together?

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235. Find the numbers of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements. Do the words start

with P? Do all the vowels never occur together? Do all the vowels always occur together? Do the words begin with I and end in P?

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236. How many numbers greater than a million casn be formed with the digits 2,3,0,3,4,2,3?

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237. There are six periods in each working day of the school. In how many ways can one arrange 5 subjects such that each subject is allowed at least one period?

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238. If all the letters of the word AGAIN be arranged as in a dictionary, what is the fiftieth word?

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239. If the different permutations of all the letter of the word EXAMINATION are listed as in a dictionary, how many words are there in this list before the first word starting with E?

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240. Find the number of words formed by permuting all the letters of the following word: INDEPENDENCE

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241. Find the number of words formed by permuting all the letters of the following word: INDIA

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242. Find the number of words formed by permuting all the letters of the following word: SERIES

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243. Find the number of words formed by permuting all the letters of the following word: INTERMEDIATE

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244. Find the number of words formed by permuting all the letters of the following word: PAKISTAN

Watch Video Solution

245. Find the number of words formed by permuting all the letters of the following word: EXERCISES

Watch Video Solution

246. Find the number of words formed by permuting all the letters of the following word: RUSSIA

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247. Find the number of words formed by permuting all the letters of the following word: CONSTANTINOPLE

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248. In how many ways can the letters of the word ALGEBRA be arranged without changing the relative order of the vowels and consonants?

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249. How many words can be formed with the letters of the word UNIVERSITY, the vowels remaining together?

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250. How many words can be formed with the letters of the word PARALLEL so that all L's do not come together?

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251. 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?

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252. How many number4 of four digits can be formed with the digits 1,3,3,0?

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253. Howe many different numbers, greater than 50000 can be formed with eh digits 0,1,1,5,9.

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254. How many words can be formed from the letters of the word SERIES, which start with S and end with S?

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255. Find the number of numbers, greater than a million, that can be formed with the digits 2,3,0,3,4,2,3.

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256. There are three copies each of 4 different books. In how many ways can they be arranged in a shelf?

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257. 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?

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258. In how many ways can 4 red , 3 yellow and 2 green discs be arranged in a row if the discs of the same colour are indistinguishable?

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259. How many numbers greater than 1000000 can be formed by using the digits 1,2,0,2,4,2,4?

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260. In how many ways can the letters of the word ASSASSINATION be arranged so that all the S's are together?

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261. Find the total number of permutations of the letters of the word INSTITUTE.

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262. 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.

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263. In how many ways can 4 letters be posted in 5 letter boxes?

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264. Write the number of 5 digit numbers that can be formed using digits 0,1 and 2.

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265. In how many ways 4 women draw water from 4 taps, if no tap remains unused?

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266. Write the total number of possible outcomes in a throw of 3 dice in which at least one of the dice shows an even number.

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267. Write the number of arrangements of the word BANANA in which two N's come together.

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268. Write the number4 of ways in which 7 men and 7 women can sit on a round table such that no tow women sit together.

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269. Write the number of words that can be formed out of the letters of the word COMMITTEE.

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270. Write the number of all possible words that can be formed using the letters of the word MATHEMATICS.

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271. Write the number of ways in which 6 men and 5 women can dine at a round table if no tow women sit together.

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272. In how many ways can 5 boys and 3 girls be seated in a row so that each girl is between 2 boys?

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273. Write the number of numbers that can be formed using all for digits 1,2,3,4.

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274. The number of permutations of n different things taking r at a time when 3 particular things are to be included is

a. ${}^{n-3}P_{r-3}$

b. ${}^{n-3}P_r$

c. ${}^nP_{r-3}$

d. $r!{}^{n-3}C_{r-3}$

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275. The number of five digit telephone numbers having at least one of their digits repeated is 90000 b. 100000 c. 30240 d. 69760

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276. The number of words that can be formed out of the letters of the word ARTICLE so that vowels occupy even places is 574 b. 36 c. 754 d. 144

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277. How many numbers greater than 10 lacs be formed from 2,3,0,3,4,2,3? 420 b. 360 c. 400 d. 300

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278. The number of words from the letters of the word BHARAT in which B and H will never come together, is 360 b. 240 c. 120 d. none of these

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279. The number of six letter words that can be formed using the letters of the word ASSIST in which Ss alternate with other letters is 12 b. 24 c. 18 d. none of these

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280. the number of arrangements of the word DELHI in which E precedes I is 30 b. 60 c. 120 d. 59

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281. Number of all four digit numbers having different digits formed of the digits, 1,2,3,4 and 5 and divisible by 4 is 24 b. 30 c. 125 d. 100

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282. The number of ways in which 6 men can be arranged in a row so that three particular men are consecutive is $4! \times 3!$ b. $4!$ c. $3! \times 3!$ d. none of these

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283. A 5-digit number divisible by 3 is to be formed using the number 0,1,2,3,4 and 5 without repetiition. Find total of ways in whiich this can be done.

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284. If $^{k+5}P_{k+1} = \frac{11(k-1)}{2} .^{k+3}P_k \ P_k$ then the values of k are $7 \ and \ 11$ b. $6 \ and \ 7$ c. $2 \ and \ 11$ d. $2 \ and \ 6$

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285. The number of arrangements o the letters of the word BHARAT taking 3 at a time is 72 b. 120 c. 14 d. none of these

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286. The number of words that can be made by re-arranging the letters of the word APURBA so that vowels and consonants are alternate is 18 b. 35 c. 36 d. none of these

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287. The number of ways in which the letters of the word ARTICLE can be arranged so that even places are always occupied by consonants is 576 b. ${}^4C_3 \times 4!$ c. $2 \times 4!$ d. none of these

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Others

1. If $5\ P_{4,n} = 6,\ P_{n,3},\ f \in d\ n$

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2. The product of consecutive positive integers is divisible by $r!$ b. $r! + 1$ c. $(r+1)!$ d. none of these

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