MATHS

BOOKS - MAXIMUM PUBLICATION

PERMUTATION AND COMBINATIONS

Example

1. There are 3 routes from A to place B and 2 routes from place B to C . Find how many different routes are there from A to C.

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2. How many 3 digit number can be formed from the digits 1,2,and 3, assuming that the repetition of digits is not allowed.

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3. How many two digit even number with distinct digits can be formed from the digits 1,2,3,4,5.

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4. Evalute the following:

$$\frac{7!}{5!}$$

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5. Evalute the following:

$$\frac{12!}{10! \times 2!}$$

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6. Evalute the following:

$6P_4$

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7. Evalute the following:

$9P_4$

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8. Evalute the following:

$10P_5$

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9. Evalute

$10C_4$

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10. Evalute

$21C_3$

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11. Evalute

$19C_{15}$

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12. Evalute

$31C_{29}$

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13. How many five digits telephone numbers can be constructed using the digits 0 to 9, if each number starts with 67 and no digit appears more than once?

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14. In how many ways can 5 persons sit in a car, two Including the driver In the front seat and 3 in the back seat. If two particular person out of the 5 are to avoid the driver's seat?

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15. How many numbers can be formed from the digits 1,2,3 and 9 if repetition of digits is not allowed?


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16. How many 3-digit even numbers can be formed from the digits 1,2,3,4,5,6 if the digits can be repeated?


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17. How many 3-digit numbers can be formed from the digits 1,2,3,4 and 5 assuming that repetition of the digits is allowed?

18. How many 3-digit numbers can be formed from the digits 1,2,3,4 and 5 assuming that repetition of the digits is not allowed

19. How many 8 letter words, with or without meaning, can be formed using the word EQUATION, using each letter exactly once?

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20. Find the number of ways in which the letters of the word ASSISTANT can be arranged among themselves.

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21. Find the number of different signals that can be made by arranging at least three flags in order on a vertical pole, if 6 different coloured flags are available.

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22. Find the value of n such that

$nP_5 = 42 \times nP_3, n > 4$

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23. Find the value of n such that

$(n-1)P_3 : nP_4 = 1:9$

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24. Find the value of r if

$5 \times 4P_r = 6 \times 5P_{r-1}$

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25. Find the value of r if

$5P_r = 6P_{r-1}$

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26. The letters of the word TUESDAY are arranged in a line, each arrangement ends in S.

How many different arrangements are possible?

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27. The letters of the word TUESDAY are arranged in a line, each arrangement ends in S.

How many of them start with letter D?

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28. Consider the word ANNAMALAI

How many new words can be formed using the given words?

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29. Consider the word ANNAMALAI

Among the new words how many of them will begin with A and end with I.

30. Find the rank of the word NAAGI, if these words are written as in a dictionary.

31. A committee of 3 persons is to be constituted from a group of 2 men and 3 women.

In how many ways can be done?

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32. A committee of 3 persons is to be constituted from a group of 2 men and 3 women.

How many of these committees would consist of 1 man and 2 women?

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33. It was found at a certain dinner meeting that after every member had shaken hand with every other members, 45 handshakes were interchanged. How many members were present at the meeting?

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34. In an exam, Arjun has to select 4 questions from each part. There are 6,7 and 8 question in Part I, Part II and Part III, respectively. What is the number of possible combinations in which he can choose the question?

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35. Find the number of different 8-letter arrangements that can be made from the

letters of the word DAUGHTER so that

all vowels occur together.

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36. Find the number of different 8-letter arrangements that can be made from the letters of the word DAUGHTER so that

all vowels do not occur together.

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37. How many permutations are there of the 11 letters in MISSISSIPPI taken all together?

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38. How many permutations are there of the 11 letters in MISSISSIPPI all the I's not come together?

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39. Find the number of arrangements of 6 boys and 5 girls in a row so that no two girls sit together.

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40. Find the number of arrangements of 6 boys and 5 girls in a row so that boys and girls occupy alternate positons

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41. If the letters of the word DHRONA be permuted and arranged as in a dictionary, find the rank of the word.

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42. If the letters of the word MOTHER be permuted and arranged as in a dictionary, find the rank of the word.

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43. How many

Straight line can be formed by joining 12 points, 4 of which are collinear.

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44. How many

Triangles can be formed by joining 12 points, 4 of which are collinear.

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45. From 7 men and 4 ladies a committee of 6 is to be formed. In how many ways can this be done when the committee contains exactly two ladies.

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46. From 7 men and 4 ladies a committee of 6 is to be formed. In how many ways can this be done when the committee contains at least two ladies.

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47. A box contains 6 apples, 5 oranges and 8 mangoes.

In how many ways a fruit is selected from the box.

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48. A box contains 6 apples, 5 oranges and 8 mangoes.

In how many different ways can an apple and an orange be selected.

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49. A box contains 6 apples, 5 oranges and 8 mangoes.

In how many different ways a person take one apple, one orange and one mango.

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50. A student has to answer 6 out of 10 questions which are divided into two parts containing 5 questions each and he is permitted to attempt not mom than 4 from any group. In how many ways can he make up his choice?

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51. How many chords can be drawn through 15 points on a circle?

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52. A bag contains 5 black and 6 red balls. Determine the number of ways in which 2 black and 3 red balls can be selected?

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53. If $\hat{}\ nC_2 =^n C_8$ then find n

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54. Find the value of n such that

$nP_5 = 42 \times nP_3, n > 4$

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55. Find the arrangements of letters of the word INDEPENDENCE. In how many of these arrangements.

do the words start with P.

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56. Find the arrangements of letters of the word INDEPENDENCE. In how many of these arrangements.

do all the vowels always occur together.

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57. Find the arrangements of letters of the word INDEPENDENCE. In how many of these arrangements.

do the vowels never occur together.

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58. Find the arrangements of letters of the word INDEPENDENCE. In how many of these arrangements.

do the words begin with I and end in P?

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59. Consider the word ASSASSINATION.

How many permutations are there of the letters of the given word?

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60. Consider the word ASSASSINATION.

How many different ways can be arranged so that the 4S's come together?

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61. Consider the word ASSASSINATION.

How many different ways can be arranged so that the 4S's do not come together?

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62. Consider the word ASSASSINATION.

How many begin with A?

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63. A team of 11 cricket players is to be chosen from 15 players. In how many ways can this be done so as to:

Include a particular player A.

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64. A team of 11 cricket players is to be chosen from 15 players. In how many ways can this be done so as to:

Exclude a particular player B.

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65. A team of 11 cricket players is to be chosen from 15 players. In how many ways can this be

done so as to:

Include A and exclude B.

66. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

four cards are of the same suit,

67. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

are face cards,

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68. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

two are red cards and two are black cards,

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69. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

cards are of the same colour?

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70. If $\hat{} \ nC_9 =^n C_8$ find 'n' and $\hat{} \ nC_{17}$

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71. How many chords can be drawn, through 23 points on a circle?

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72. Simplify $\frac{nP_4}{(n-1)P_3}$

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73. In how many different ways can the letters of the word HEXAGON be permuted?

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74. In how many different ways can a team of 3 boys and 3 girls be selected from 5 boys and 4 girls?

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75. if $\frac{1}{8!}+\frac{1}{9!}=\frac{x}{10!}$, then find x.

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76. How many 4 digit numbers are there with no digit repeated?

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77. If $nC_8 = nC_2$, then find nC_3 ?

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78. Consider all the letters of the word 'FALIURE'

How many words can be formed using these letter?

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79. Consider all the letters of the word 'FALIURE'

How many words can be formed so that the vowels being together?

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80. Consider all the letters of the word 'FALIURE'

How many words begin with A and end with E?

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81. Find the value of n such that

$nP_5 = 42 \times nP_3, n > 4$

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82. How many words, with or without meaning, can be formed using all the letters of the word CHEMISTRY, using each letter exactly once? How many of them start with C and end with Y?

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83. If $2nC_3 : nC_3 = 12 : 1$ find n.

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84. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these four cards are of the same suit,

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85. If $nC_9 = nC_8$ find nC_{17}

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86. A committee of 5 person is to be selected from a group of 4 men and 5 women. In how many ways can this be done? How many of these committees would consist of 2 men and 3 women?

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87. If $nC_9 = nC_8$ find nC_{17}

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88. How many three digit number can be formed using the digits 1,2,3,4,5 if repetition is not allowed?

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89. In How many ways can a team of 4 boys and 3 girls be selected from 6 boys and 4 girls?

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90. If $nC_5 = nC_4$ find nC_8

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91. How many chords can be drawn through 20 points on a circle?

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92. A bag contains 6 red and 5 blue balls. In how many ways can one choose 3 red and 2 blue balls from this bag?

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93. Find the number of permutation of the letters of the word ALLAHABAD.

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94. Find r ,if $\hat{} \ 5P_r = 2 \times^6 P_{r-1}$

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95. Find the value of n such that

$nP_5 = 42 \times nP_3, n > 4$

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96. A committee of 3 persons is to be constituted from a group of 2 men and 3 women.

In how many ways can this be done?

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97. A committee of 3 persons is to be constituted from a group of 2 men and 3 women.

How many of these committees would consist of 1 man and 2 women?

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98. If $\hat{}\ {}^{n}C_{2} : {}^{2n}C_{1} = 3:2$ find n

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99. Find the number of words that can be formed from the letters of the word MALAYALAM.

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100. If $5 \times 4P_r = 6 \times 5P_{r-1}$ find 'r'.

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101. How many 3 digit number can be formed with the digits 0,1,2,3 and 4?

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102. In a Panchayath there are 10 Panchayath members. Ladies contested only in the 50 % reserved constituency. If the post president and vice president are reserved for ladies, in how many ways both the president and vice president can be selected?

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103. Prove that $nC_r = nC_{n-r}$

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104. Twenty eight matches were played in a volley ball tournament. Each team playing one against each of others. How many teams were there?

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105. If the letters of the word 'TUTOR' be permuted among themselves and arranged as in a dictionary, then find the position of the word 'TUTOR'

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106. A student is Instructed to answer any 8 out of 12 questions.

How many different ways he can choose the questions?

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107. A student is Instructed to answer any 8 out of 12 questions.

How many different ways he can choose the questions so that question no.1 will be included?

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108. A student is Instructed to answer any 8 out of 12 questions.

How many different ways, he can choose the questions so that question no.1 will be included and question no.10 will be excluded?

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109. solve for the Natural n,

$12.\ (n-1)P_3 = 5.\ (n+1)p_3$

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110. In how many ways can 7 athletes be chosen out of 12?

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111. The English alphabets has 5 vowels and 21 consonants. How many words with two different vowels and two different consonants can be formed without repetition of letters?

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112. Find r if $5P_r = 6p_{r-1}$

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113. If there are 12 persons in a party and each of them shake hands with all others, what is the total number of handshakes?

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114. In How many ways can a committee of 3 men and 2 women be selected out of 7 men and 5 women?

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115. Find the value of n such that

$3nP_4 = 5.(n-1)P_4, n > 4$

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116. In how many ways can 5 students be seated on a bench?

117. Find the number of different 8-letter arrangements that can be made from the letters of the word, 'DAUGHTER' so that:

All vowels are occur together.

118. Find the number of different 8-letter arrangements that can be made from the letters of the word, 'DAUGHTER' so that:

All vowels do not occur together.

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119. Determine n if $2nC_3 = 11nC_3$

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120. In how many ways can a cricket team of 11 of players be selected from 15 players?

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121. A bag contains 5 white, 6 red and 4 blue balls. Determine the number of ways in which 2 white, 3 red and 2 blue balls can be selected.

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122. The number of 3 digit numbers can be formed from the digits 1,2,3,4,5 assuming that repetition of the digits is not allowed is .....

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123. if $\frac{1}{6!}+\frac{1}{7!}=\frac{x}{8!}$, find x.

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124. How many words, with or without meaning, can be formed using all the letters of the word 'FRIDAY', using each letter exactly once? How many of them have first letter is a vowel?

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125. If $nC_7 = nC_5$, n = ...

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126. A bag contains 5 blue and 6 white balls. Determine the number of ways in which 3 blue and 4 white balls can be selected.

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127. What is number of choosing 3 cards from a pack of 52 playing cards? In how many of these 3 cards of the same colour?

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128. IF $\frac{1}{8!}+\frac{1}{9!}=\frac{x}{10!}$, find x.

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129. How many four digit numbers can be formed using the digits 4,5,6,7,8 if repetition of digits is not allowed?

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130. Find the number of arrangements that can be made from the letters of the word

'MOTHER' so that all vowels occur together.

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

the word starts with P and ends with S?

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132. In how many ways can the letters of the word PERMUTATIONS be arranged, if there are

always 4 letters between P and S?

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133. 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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134. How many chords can be drawn through 21 points?

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135. What is the minimum number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these

are 4 cards of the same suit?

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136. What is the minimum number of ways of choosing 4 cards from a pack of 52 playing

cards? In how many of these

do 4 cards belong to 4 different suits?

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137. Find the number of permutation of the letters of the word, ALLAHABAD.

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138. How many 5-digit telephone numbers can be constructed using the digits 0 to 9 if each

number starts with 67 and no digit appears more than once?

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139. Find 'n' if $9 \times^{(n-1)} P_3 =^n P_4$.

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140. Find the number of words that can be formed from the letters of the word, COMMERCE'

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141. In how many ways can a group of 12 students be selected from 15 students? How many of these groups would include one particular student?

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142. $\frac{0!}{1!}$=.....

A. 0

B. 1

C. 2

D. 3

Answer: B

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143. Find r , if $5 \times^4 P_r = 6 \times^5 P_{r-1}$

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144. Find the number of different 8-letter arrangements that can be made from the letters of the word DAUGHTER so that all vowels do not occur together.

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145. ^ nC_{n-1}=....

A. n-1

B. n

C. 0

D. 1

Answer: B

Watch Video Solution

146. if $\hat{} nC_9 =^n C_8$ find $\hat{} nC_2$

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147. How many ways can a team of 5 persons be selected out of a group of 4 men and 7

women, if the team has at least one man and one women?

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148. $\hat{}\ {}^{7}P_{7}$ = ...

A. 7

B. $7!$

C. 1

D. 7^{7}

Answer: B

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149. Find the number of words that can be formed from the letters of the word "MALAYALAM". How many of them start with Y?

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150. Determine n if $2nC_3 = 11nC_3$

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151. $\hat{}\ (29)C_{29}$= .....

A. 0

B. 1

C. 2

D. 3

Answer: B

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152. Prove that $\hat{}(61)C_{57} -^{60} C_{56} =^{60} C_3$

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153. In how many ways can the letters of the word 'ARRANGE' be arranged such that two A's do not occur together?

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154. Write the value of $\hat{}7C_5$

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155. Find the value of n such that

$3nP_4 = 5.(n-1)P_4, n > 4$

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156. ^ $(29)C_{29}$ = ...

A. 0

B. 1

C. 2

D. 3

Answer: B

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157. Find the value of n,

if $12 \times^{(n-1)} P_3 = 5 \times^{(n+1)} P_3$

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158. 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 at least one boy and one girl?

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159. How many 4 digit numbers can be formed using the digits 9, 8, 7, 6, 5, 4, if no digits are repeated?

A. 630

B. 603

C. 306

D. 360

Answer: D

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160. A committee of 3 persons is to be constituted from a group of 2 men and 3 women.

In how many ways can be done?

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161. Determine n if $2nC_3 = 11nC_3$

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162. $\hat{} (569)C_{569}$ = ...

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163. If $2nC_3 : nC_3 = 12 : 1$ find n.

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164. If the letters of the word EQUATION are arranged, Find the number of arrangements in which no two consonants occur together?

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165. if $\frac{1}{6!}+\frac{1}{7!}=\frac{x}{8!}$, then x is .....

A. 32

B. 16

C. 64

D. 8

Answer: C

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166. Given 5 flags of different colour, how many different signals can be generated if each signal Is generated of 2 flags one below the other

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167. Find r ,if $\hat{} \ 5P_r = 2 \times^6 P_{r-1}$

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168. If $\hat{} \ nC_9 =^n C_8$ then n=.....

A. 9

B. 8

C. 17

D. 1

Answer: C

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169. How many chords can be drawn through 12 point on a circle?

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170. What is the number of way of choosing 4 cards from a peck 52 playing cards? In how many of these:

Four cards are of the same suit.

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171. What is the number of way of choosing 4 cards from a peck 52 playing cards? In how many of these:

Cards are of the same colour.

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