

Permutation and Combination - Solved Questions and Answers - GeeksforGeeks

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Question 1: How many words can be formed by using 3 letters from the word "DELHI"? Solution: Here we will use the Permutations for this question. Formula for permutation is nPr , for this we have, $n = 5$: Total 5 Letters $r = 3$: Letters word we required $n P r = \frac{n!}{(n-r)!}$ $5 P 3 = 5!/2! = 120/2 = 60$ So, Total we can form 60 different permutation of word from Letter Delhi.

Question 2: How many words can be formed by using the letters from the word "DRIVER" such that all the vowels are always together? Solution: In these types of questions, we assume all the vowels to be a single character, i.e., "IE" is a single character. So, now we have 5 characters in the word, namely, D, R, V, R, and IE. But, R occurs 2 times. Number of possible arrangements = $5! / 2! = 60$ Now, the two vowels can be arranged in $2! = 2$ ways. Total number of possible words such that the vowels are always together = $60 \times 2 = 120$

Question 3: In how many ways, can we select a team of 4 students from a given choice of 15? Solution: Number of possible ways of selection = $15 C 4 = 15! / ((4!) \times (11!))$ Number of possible ways of selection = $(15 \times 14 \times 13 \times 12) / (4 \times 3 \times 2 \times 1) = 1365$

Question 4: In how many ways can a group of 5 members be formed by selecting 3 boys out of 6 boys and 2 girls out of 5 girls? Solution: Number of ways 3 boys can be selected out of 6 = $6 C 3 = 6! / [(3!) \times (3!)] = (6 \times 5 \times 4) / (3 \times 2 \times 1) = 20$ Number of ways 2 girls can be selected out of 5 = $5 C 2 = 5! / [(2!) \times (3!)] = (5 \times 4) / (2 \times 1) = 10$ Therefore, total number of ways of forming the group = $20 \times 10 = 200$

Question 5: How many words can be formed by using the letters from the word "DRIVER" such that all the vowels are never together? Solution: We assume all the vowels to be a single character, i.e., "IE" is a single character. So, now we have 5 characters in the word, namely, D, R, V, R, and IE. But, R occurs 2 times. Number of possible arrangements = $5! / 2! = 60$ Now, the two vowels can be arranged in $2! = 2$ ways. Total number of possible words such that the vowels are always together = $60 \times 2 = 120$, Total number of possible words = $6! / 2! = 720 / 2 = 360$ Therefore, the total number of possible words such that the vowels are never together = 240

Question 6: How many words can be formed by using 4 letters from the word "COMPUTER"? Solution: For this question, we will use Permutations. $n=8$: Total 8 letters in the word "COMPUTER" $r=4$: We are required to form a 4-letter word Using the permutation formula: $r = \frac{n!}{(n-r)!}$ $8P4 = \frac{8!}{(8-4)!} = \frac{8!}{4!} = \frac{40320}{24} = 1680$ So, the total number of different permutations of words we can form from the letters in "COMPUTER" is 1680 .

Question 7: How many words can be formed by using the letters from the word "BALLOON" such that all the vowels (A and both O's) are always together? Solution: We will assume all vowels (A and O) together as a single unit, i.e., "AO" becomes a single character. Now, we have the characters B, L, L, O, N, and AO. But, L occurs 2 times. Number of possible arrangements = $\frac{5!}{2!} = \frac{120}{2} = 60$ Now, the vowels (A and O) can be arranged in $3! = 3$ ways. Therefore, the total number of possible words where the vowels are always together is: $60 \times 3 = 180$ So, the total number of possible words is 180 .

Question 8: In how many ways can we select a team of 5 students from a given choice of 20? Solution: The number of possible ways of selection is given by: $20C5 = \frac{20!}{5!(20-5)!} = \frac{20!}{5! \times 15!} = 15504$

$15!}{15!} \cdot \frac{20 \times 19 \times 18 \times 17 \times 16}{5 \times 4 \times 3 \times 2 \times 1} = 15504$ So, the number of ways to select 5 students from 20 is 15504 . Also Check: Tricks to Solve Permutation & Combination Questions Comment Article Tags: Article Tags: Aptitude Quantitative Aptitude