MATHS

BOOKS - JEE MAINS PREVIOUS YEAR

PERMUTATIONS AND COMBINATIONS

Others

1. The set $S = \{1, 2, 3, , 12)$ is to be partitioned into three sets A, B, C of equal size. Thus,

$A \cup B \cup C = S, A \cap B = B \cap C = A \cap C = \varphi$

. The number of ways to partition S is (1) $\frac{12!}{3!(4!)^3}$ (2) $\frac{12!}{3!(3!)^4}$ (3) $\frac{12!}{(4!)^3}$ (4) $\frac{12!}{(4!)^4}$

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2. In a shop, there are five types of ice-creams available. A child buys six ice-creams.

Statement-1: The number of different ways the child can buy the six ice-creams is $.^{10}C_4$.

Statement-2: The number of different ways the child can buy six ice-creams is equal to the

number of different ways to arranging 6A's and 4B's in a row.

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3. How many different words can be formed by jumbling the letters in the word MISSISSIPPI in which no two S are adjacent? (1) $8 \dot{\wedge} 6C_4 \dot{\wedge} 7C_4$ (2) $6 \cdot 7 \dot{\wedge} 8C_4$ (3) $6 \cdot 8 \dot{\wedge} 7C_4$ (4) $7 \dot{\wedge} 6C_4 \dot{\wedge} 8C_4$

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4. From 6 different novels and 3 different dictionaries, 4 novels and 1 dictionary are to be selected and arranged in a row on a shelf so that the dictionary is always in the middle. Then the number of such arrangements is (1) less than 500 (2) at least 500 but less than 750 (3) at least 750 but less than 1000 (4) at least 1000

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5. Four numbers are chosen at random (without replacement) from the set {1, 2, 3, ..., 20}. Statement-1: The probability that the chosen numbers when arranged in some order will form an AP Is $\frac{1}{85}$. Statement-2: If the four chosen numbers from an AP, then the set of all possible values of common difference is {1, 2, 3, 4, 5}.

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6. Statement-1 : The number of ways of distributing 10 identical balls in 4 distinct boxes such that no box is empty is ˆ $9C_3$. Statement-2 : The number of ways of choosing any 3 places from 9 different places is ˆ $9C_3$. Statement-1 is true, Statement-2 is true; Statement-2 is a correct explanation for Statement-1. Statement-1 is true, Statement-2 is true; Statement-2 is not a correct explanation for Statement-1. Statement-1 is true, Statement-2 is false. Statement-1 is false, Statement-2 is true.

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7. Assuming the balls to be identical except for difference in colours, the number of ways in which one or more balls can be selected from 10 white, 9 green and 7 black balls is (1) 880 (2) 629 (3) 630 (4) 879

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8. Let A and B be two sets containing 2 elements and 4 elements respectively. The number of subsets of $A \times B$ having 3 or more elements is (1) 220 (2) 219 (3) 211 (4) 256

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9. Let T_n be the number of all possible triangles formed by joining vertices of an n-sided regular polygon. If $T_{n+1} - T_n = 10$, then the value of n is (1) 5 (2) 10 (3) 8 (4) 7

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10. The number of integers greater than $6,000$ that can be formed, using the digits $3, 5, 6, 7$ and 8, without repetition, is :

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11. A man X has 7 friends, 4 of them are ladies and 3 are men. His wife Y also has 7 friends, 3 of them are ladies and 4 are men. Assume X and Y have no common friends. Then the

total number of ways in which X and Y together can throw a party inviting 3 ladies and 3 men, so that 3 friends of each of X and Y are in the party, is : 469 (2) 484 (3) 485 (4) 468

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