Distinguishable Permutation

Distinguishable Permutations: the permutations of a set of objects where some of them are alike

The number of distinguishable permutations of n objects when p are alike, q are alike, s are alike, and so on, is given by

$$P = \frac{n!}{p!q!r!}$$

Practice Exercises

A. Find the number of distinguishable permutations for the following.

1. ALAPAAP
2. MAGSASAKA
3. HIMPAPAWID
4. PALAYAN
5. BINIBINI

B. Find the number of distinguishable permutations for each situation.

1. In how many ways can two blue marbles and four red marbles be arranged in a row?
2. In how many different ways can five red balls, two white balls, and seven blue balls be arranged in a row?
3. Faith bought four vanilla ice-cream cones, three chocolate cones, two strawberry cones, and five ube-langka cones for her 14 tutors. In how many ways can she distribute the cones among her tutors?

Problem Set

A. Find the number of distinguishable permutations for the following.

1. PARALLEL
2. REPETITION
3. PHILIPPINES
4. GOOGOLPLEX
5. MISSISSIPPI

B. Find the number of distinguishable permutations for each situation.

1. In how many ways can 4 green marbles and 6 blue marbles be arranged in a row?
2. How many distinguishable permutations are possible with all the letters of the word ELLIPSES?
3. Find the number of distinguishable permutations of the digits of the number 348,838.

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