Combinations and Permutations

Anas Syed

June 29, 2015

Contents

1 Introduction

Define the set A where $|A| = n$. Obviously, every element is unique, by the definition of a set.

2 Permutations

Order matters.

2.1 With repetition

2.1.1 Problem

Work out how many ways there are of choosing r elements from A, and we can choose the same element multiple times.

2.1.2 Solution

The first time we choose an element, we have n choices. It is the same for all r choices we make. It is obvious that the answer is n^r, but how can we prove this more rigorously?