NPTEL

NPTEL ONLINE COURSE

Discrete Mathematics

Let Us Count

Permutations - Part 4

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So a formula for nPr in general is going to be you have n objects let's say a1, a2 up to an and you have r slots to fill, r number of slots and the first slot you can fill you have n choices for the first slot and n minus 1 choices for the second, n minus 2 for the third, so on and so forth. For the last one you have n minus r plus 1. You want to think why it's minus r plus 1. Right? So it will be the product of these things is going to be n into n minus 1 into n minus 2 up to n minus r plus 1. A little bit of observation says this is nothing else but n factorial in some terms chopped off, correct. What is that n factorial divided by what is the immediate next term after this as you can see it's decreasing so after n-r+1 it will be 1 less starting from here which is n minus r and factorial of that which is being chopped off I can start write that in the denominator. Perfect. That's the formula for nPr.

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