Permutations Notes

1. Factorial- the factorial of a number is the product of the natural numbers less than and equal to the number

Example A on board)

0! = 1
1! = 1
2! = 2
6! = 720
N! = n (n-1) (n-2) ….1

Example B on board)

Order 3 people from a group of 7 people in first, second and third place.

In first place you have 7 options, in second you'd have 6 options and in third You'd have the remaining 5 people as options. That gives us 7x6x5 = 210.

Another way to do this is by using factorials: (7!)/(4!) = 210. Here, we have 7 people total where we need to choose 3, so we'd "remove" the last 4 spots by dividing by 4.

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2. Permutation- a selection of a group of objects in which order is important. The general rule for permutations is: nPr = (n!)/(n-r)!

Example A on board)

How many ways can a club select a president, a vice president, and a secretary From a group of 5 people?

This is the equivalent of selecting and arranging 3 items from 5.
5P3 = (5!)/(5-3)! = 60. So there are 60 ways to select the 3 people.