Starting from a city, we will have N-1 options of where to go next, and from the next city, we will have N-2 options, and so on. This will give us a total of (N-1)! paths in total. However, to find only the distinct paths, we now need to eliminate the dublicates. For each path, we know we can can find the same (distinct) path by simply reversing it. Thus, (N-1)! will contain twice as many paths as we want, and the answer is that there are (N-1)! / 2 distinctive paths between the N cities.