Bins and Boxes Problems

I had to look to my probability notes to remember what this type of problem is called. I believe it is called a "balls and bins" or "balls and boxes" problem. Essentially, each possible combination of tootsie pops (or different colors of crayons) corresponds to putting boxes in a bin, e.g. if you have three flavors of tootsie pops and a bag that contains 9 tootsie pops, a combination of 2 strawberry, 3 cherry, and 4 apple tootsie pops corresponds to putting two balls into a "strawberry" box, three balls into a "cherry" box, and 4 balls into an "apple" box, where the boxes are distinguishable (i.e. labelled) but the balls are not. This corresponds to "theorem 4" here. I'm not too sure that I like the way that document explains it, so I found that it is also called a stars and bars problem, whose explanation is given here (the stars and bars proof translates this problem of putting balls into boxes to a problem concerning ordering indistinguishable stars and dividers). In either case, if there are *k* flavors (aka boxes) and *n* spots (aka balls) in the bag, the solution, I believe, is (*n + k - 1*) choose (*n*) or (*n + k - 1)* choose (*k - 1*), which are equal (the last part of the proof of theorem 2 on the wikipedia page perhaps gives the best explanation).

N = # of balls (not distinguishable)
K = # of Boxes (distinguishable)

# of arrangements = $\binom{n+k-1}{n} = \binom{n+k-1}{k-1}$