Bracelet Problem with Identical Beads

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Considering beads as corners of n-gons, we made 3D models, i.e. real bracelets. When we work on them on paper, we used digits {0,1,2} for each color. With the help of our models, considering all the symmetry situations of a rotating circle in a 3D space, we used mostly grouping and recursive functions (also some summation formulas), to investigate what happens when the number of bracelets increases. Via our first theorems and models, we generalized our theorems and we developed a recursive algorithm to enumerate the maximum number of bracelets made with those identical beads. Number of bracelets made with 1 blue, r identical red and n identical black beads; F(1,r,n) = C(n+r-1,5) + F(1,r-2,n) + F (1,r,n-2) Number of bracelets made with 2 identical blue, 2 identical red and 2n+1 identical black beads; F(2,2,2n+1) = n^3+5n^2+8n+4 Number of bracelets made with 2 identical blue, 2 identical red and 4n identical black beads; F(2,2,4n) = 8n^3+14n^2+9n+2 Number of bracelets made with 2 identical blue, 2 identical red and 4n+2 identical black beads; F(2,2,4n+2) = 8n^3+26n^2+29n+11

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