

SUMMER 2017 - COMBINATORICS 1 - BONUS QUESTION

Independent work, all honorable references permitted..

Given a cube and six different colors of paint, how many distinct patterns of painting the sides (a single color per side) are there if every pattern must have no more than four different colors used? Two patterns are considered the same if one pattern can be matched to another pattern by rotating the cube. You will need to read 5.6 for this and you will need Maple or Wolfram for some calculations. Look at Wikipedia for more info about the rotation group of the cube.