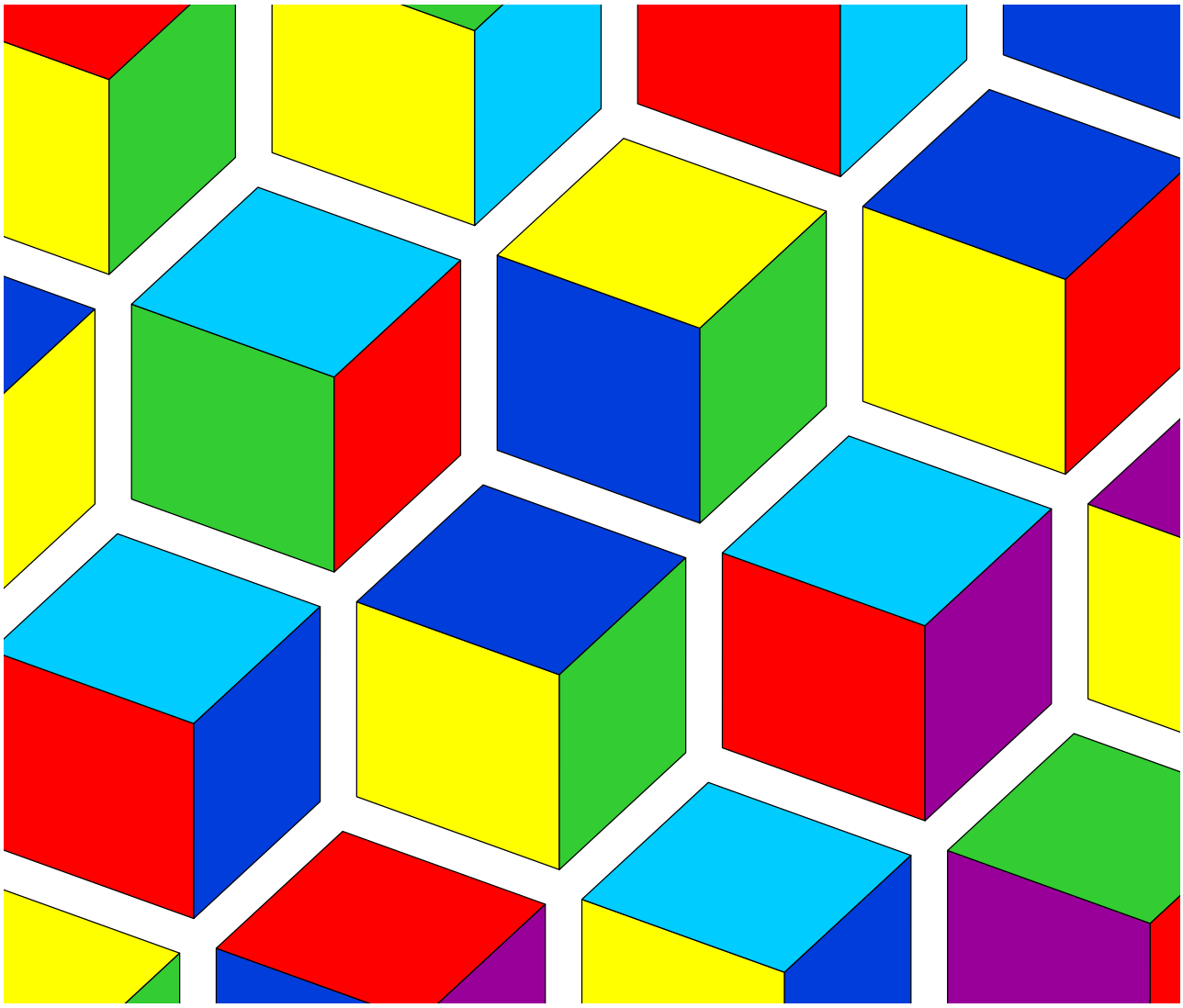
# Painting A Cube

after Lewis Carroll





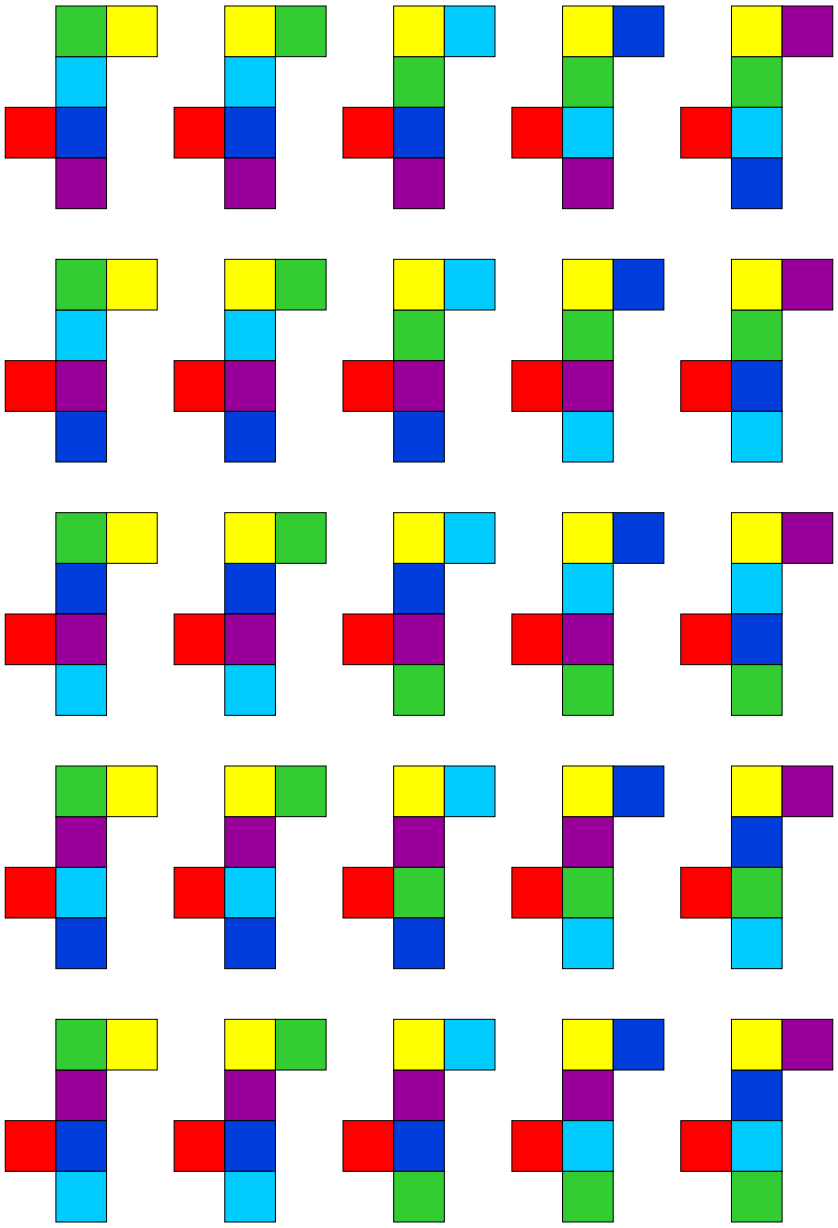
Imagine that you have some wooden cubes.

You also have six paint tins each containing a different color of paint.

You paint a cube using a different color for each of the six faces.

How many different cubes can be painted using the same set of six colors?

Remember that two cubes are different only when it is not possible, by turning one, to make it correspondent with the other.



Let the six faces be a, b, c, d, e and f. With face a opposite face b, there are six arrangements for the other four colors around the cube: cdef, cdfe, cedf, cefd, cfde and cfed. Likewise for face a opposite face c; face a opposite face d; face a opposite face e; face a opposite face f; all have six arrangements for the remaining four colors. Hence the total is 5 x 6 = 30 arrangements.