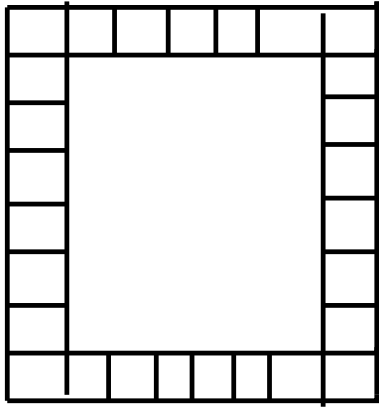


Due: Monday, November 22



1. How many ways are there of k -coloring the squares of the above diagram if the group acting is e_0, e_1, e_2, e_3 where e_j is rotation by $2\pi j/4$. Assume that instead of 28 squares there are $4n - 4$.
2. How many ways are there of k -coloring the squares of the same diagram if the group acting is $e_0, e_1, e_2, e_3, p, q, r, s$ where p, q, r, s are horizontal, vertical, diagonal reflections.
3. How many ways are there of k -coloring the 7 vertices of the tree below if the group acting is has elements e, g_a, g_b, g_c where e is the identity and g_x rigidly rotates the tree below x .

