

Chapter 7C/8A Random Group Quiz. Math 430-001 (Ellis)

Instructions. Write all answers clearly on one piece of paper, and put all group members' names on the top of the paper. If you talk, you must do so **very quietly!**

1. What does the Orbit-Stabilizer Theorem tell us about the value of $|\text{orb}_G(i)| \cdot |\text{stab}_G(i)|$?
2. Name a group of permutations isomorphic to the group of rotations of a (3-dimensional) cube.
3. Suppose $|G| = n$ and $|H| = m$. How many elements are in the external direct product $G \oplus H$?
4. (True/False) If G is Abelian, then $G \oplus H$ is Abelian regardless of whether H is Abelian or not.
5. Let $g_1 \in G_1$ and $g_2 \in G_2$ be elements of finite order. What is the order of (g_1, g_2) in $G_1 \oplus G_2$?