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 distinguishes a group isomorphism from a group homomorphism?
2. What is the kernel of a group homomorphism?
3. (True/False) If $\phi : G \to \overline{G}$ is a group homomorphism and $\overline{e}$ is the identity of $\overline{G}$, then it is possible that $|\phi^{-1}(\overline{e})| > 1$.
4. (True/False) The kernel of a homomorphism from G to some other group is a subgroup of G.
5. (True/False) Let $\phi : G \to \overline{G}$ be a homomorphism that is *onto* $\overline{G}$, and let $x, y \in \overline{G}$. It is possible for $|\phi^{-1}(x)| \neq |\phi^{-1}(y)|$.