

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. Suppose a group element a has order $n \in \mathbb{Z}^+$. What can we say about subgroups of $\langle a \rangle$ versus divisors of n ?
2. For $n \in \mathbb{Z}$, $\phi(n)$ is the Euler phi function of n . What is $\phi(8)$?
3. What does an edge (or line) in a subgroup lattice represent?
4. (True/False) All cyclic groups are essentially like either \mathbb{Z} , or \mathbb{Z}_n for some $n \in \mathbb{Z}^+$.