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 is the condition for a subgroup $H \leq G$ to be a normal subgroup? Be specific with any quantifiers.

2. (True/False) The center $Z(G)$ is a normal subgroup of $G$.

3. What is meant by the factor group formed in $G$ using a normal subgroup $H$ of $G$?

4. (True/False) The dihedral group $D_4$ contains a nontrivial normal subgroup (i.e., one that is neither just the identity nor all of $D_4$).

5. How should we arrange the Cayley table of $G$ in order to understand the structure of the factor group $G/H$ for some normal subgroup $H$ of $G$?