MTH101: Symmetry
Tutorial 02

Problem 1. List all groups of order 6 and 7 up to isomorphism.

Problem 2. Compute the order of all elements in the dihedral group D_6. Can you do this for D_n?

Problem 3. List all subgroups of D_6.

Problem 4. Let G be a group. Let H_1 and H_2 be subgroups of G. Is $H_1 \cap H_2$ (the intersection of H_1 and H_2) a subgroup of G? What about the union $H_1 \cup H_2$?

Problem 5. Let $\mathbb{Q}^\times$ denote the group of non-zero rational numbers under multiplication. Prove that the set of all numbers of the form $3^m 5^n$, where m and n are integers, is a subgroup of $\mathbb{Q}^\times$.