1. Consider the subset $\mathbb{Z}[i]$ of the complex numbers given by

$$\mathbb{Z}[i] = \{a + bi \in \mathbb{C} \,|\, a, b \in \mathbb{Z}\}.$$

   Show that $\mathbb{Z}[i]$ is a subgroup of $(\mathbb{C}, +)$.

2. Find all symmetric transformations of the square and show that they form a group with respect to concatenation. Give the group table. State all subgroups. Compute the order of this group.
   You do not need to prove associativity.

3. Write addition and multiplication tables for arithmetic modulo 4 and modulo 8. How many elements are invertible modulo 4 and modulo 8 respectively?