Worksheet 12

1. Suppose that $H < \mathbb{Z}$ satisfies $5 \in H$ and $7 \in H$. Show that $H = \mathbb{Z}$.
2. Compute all subgroups of D_8.
3. Let G be a group and $H_1, H_2 < G$. In general, it is false that $H_1 \cup H_2$ is a subgroup. Find an example demonstrating this.