Problem 27. Consider the group $D_4$, the symmetries of the square. Find the order of each element in $D_4$.

Problem 28. In class we saw that $\mathbb{Z}_6 = \langle 1 \rangle = \langle 5 \rangle$.
(a) Find all $a \in \mathbb{Z}_7$ such that $\langle a \rangle = \mathbb{Z}_7$. Do the same for $\mathbb{Z}_8$, $\mathbb{Z}_9$, and $\mathbb{Z}_{10}$.
(b) For $n \in \mathbb{N}$, make (but do not prove) a conjecture as to when $\langle k \rangle = \mathbb{Z}_n$. 
