A. Find the periods of all elements in $(\mathbb{Z}/11\mathbb{Z})^*$.

Suppose that p and q are distinct large primes, $N = pq$, and $\phi(N) = (p-1)(q-1)$. You know N but not p, q, or $\phi(N)$. In class we have talked about how, if you were able to factor N, then you could compute $\phi(N)$.

B. Prove the converse using an algorithm. That is, explain how knowing $\phi(N)$ would let you factor N.