1. Let $m$ be an integer that is not divisible by the square of any prime. Let $G$ be an Abelian group of order $m$. Show that $G$ is cyclic.

2. Let $G$ be a group of order $pqr$, where $p, q, r$ are primes with $p < q < r$.
   a) Prove that either $G$ has a normal subgroup of order $r$, or it has a normal subgroup of order $q$.
   b) Conclude that $G$ has a subgroup of order $qr$. 