Problem 1 (5 points)
In (i) and (ii), find the order of the given elements of the direct product.

(i) \([8, 10] \in \mathbb{Z}_{12} \times \mathbb{Z}_{18}\).

(ii) \([3, 6, 12, 16] \in \mathbb{Z}_4 \times \mathbb{Z}_{12} \times \mathbb{Z}_{20} \times \mathbb{Z}_{24}\).

Problem 2 (5 points)
Find all abelian groups, up to isomorphism, of order 360.

Note. The phrase up to isomorphism signifies that any abelian group of order 360 should be isomorphic to one of the groups of order 360 exhibited.