

University of Bahrain
Department of Mathematics
MATHS311: Abstract Algebra 1
Fall 2017
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Homework 14: Finite Abelian Group and Sylow's theorems
Due on January 4, 2018
Hand Problems 1, 2, 8, 9

Name: _____

1. Find all finite abelian group (up to isomorphism) of order

1. 360

2. 200

3. 720

2. Let $G = \{1, 9, 16, 22, 29, 33, 74, 79, 81, \}$, where the operation is \cdot_{91} . Write G as a direct sum of cyclic groups (primary decomposition).

6. How many (up to isomorphism) abelian groups of order 16 such that $x + x + x + x = 0$?

7. Find the symmetry group of a nonsquare rectangle and write it as direct sum of cyclic groups (primary decomposition).

8. How many Sylow p -subgroups can a group G possibly have when

1. $p = 3, |G| = 72.$

2. $p = 5, |G| = 60.$

9. Prove that there are normal subgroups of groups of order

1. $|G| = 42.$

2. $|G| = 200$.

3. $|G| = 231$.

4. $|G| = 255$.