

SIXTEENTH GRADED HOMEWORK ASSIGNMENT

Problems 1 – 5 refer to the accompanying table, which maps out the operation on the product group $\mathbf{Z}_3 \times \wp_3$.

Problem 1: Is the set $H = \{(0,E), (2,C), (2,D), (2,F)\}$ a subgroup of $\mathbf{Z}_3 \times \wp_3$? Justify your answer.

Problem 2: Is the set $H = \{(0,E), (0,A), (0,B)\}$ a subgroup of $\mathbf{Z}_3 \times \wp_3$? Justify your answer.

Problem 3: Show that the set $H = \{(0, E), (0, C), (1, C), (2, C), (1, E), (2, E)\}$ is a subgroup of $\mathbf{Z}_3 \times \wp_3$.

Problem 4: Let H be the set from Problem 3. Is the group (H, \otimes) isomorphic to the group \mathbf{Z}_6 ? Justify your answer.

Problem 5: Let H be the subgroup from Problem 3. Construct the left cosets for H .