

**Course 1214 - Introduction to group theory 2013**

## S h e e t 6

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Due: at the end of the lecture

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**Exercise 1**

Construct the Cayley table for the groups:

- (i) the additive group  $\mathbb{Z}_3$ ;
- (ii) the multiplicative group  $\mathbb{Z}_6^*$ ;
- (iii) the direct product  $\mathbb{Z}_2 \times \mathbb{Z}_2$ ;
- (iv) determine whether groups in (i), (ii), (iii) are cyclic and justify your answer.

**Exercise 2**

Prove that each group of prime order is cyclic.

**Exercise 3**

Determine all subgroups of each group in Exercise 1.