

Student No.

Name:

All problems, unless otherwise specified, are from A First Course in Abstract Algebra 7ed by Fraleigh. You do NOT need to hand in solutions to the problems in parentheses, but you need to hand in solution to the extra problems if there is any.

Extra problems.

1. Let  $G_n$  be the set of elements of the ring  $\mathbb{Z}/n\mathbb{Z}$  that are not 0-divisors, which is a multiplicative group.

a. What is the group structure of  $G_7$ ?

Hint: There are only two groups of order 6, namely  $\mathbb{Z}/6\mathbb{Z}$  and  $S_3$ .

b. What is the group structure of  $G_{15}$ ?

Hint: First show that  $|G_{15}| = 8$ , and then there are five groups of order 8.

§20 6, (12), (14), (16), (18), (23), 27, 29

§21 1, 2, (4), (6), (7), (8), (9), (10), (11)

§22 (1), (2), (3), (4), 6, (10), (12), (14), 16, 22, (23), 24, 25a, 25b, 27, (29), (30)