Problems to be done, but not turned in: (Ch. 2) 7, 15, 17, 19, 23, 27, 31, 35, 39; (Ch. 3) 1, 5, 7, 9, 13, 17.

Fun: (Ch. 2) 33, 38.

Problems to be turned in:

1. (Ch. 2) 14.

2. (Ch. 2) 16.

3. Construct a Cayley table for $U(20)$.

4. (Ch. 2) 34(b,c).

5. Let

$$G = \left\{ \begin{bmatrix} a & b \\ -b & a \end{bmatrix} \left| \begin{array}{l} a^2 + b^2 \neq 0 \end{array} \right. \right\}.$$ 

It can be shown that $G$ is a group under matrix multiplication (i.e., you do not have to prove this).

Is $G$ an abelian group? Prove or disprove.

6. (Ch. 3) 6.

7. Suppose $H$ is a subgroup of $Z$ under addition, and $H$ contains 9 and 15. What are the possibilities for $H$?