## HW 5 Due: Tuesday, March 4

Do exercises 2/33, 34, 36, 38, 40, and the following:

- A. Show that if G is an abelian group,  $g, h \in G$ , g has order m and h has order n, then gh has order lcm(m, n).
- B. Let  $n \ge 2$  be an integer. Let  $U(n) = \{[a] \in \mathbb{Z}/n\mathbb{Z} : gcd(a, n) = 1\}$ . List all elements of U(5), U(12), and U(15).
- C. Prove that U(n) is a group.
- D. Construct the multiplication table for U(8).