Assignment 1

Date Due: Thursday, Jan. 28 at 5:00

Reading: Chapters 4 and 5, pages 53-92 In the second edition the reading is: Chapter 4, pages 47-59 Chapter 6, pages 76-90

Problems:

1. Prove that, if $a \mid b$ and $a \mid c$ then $a \mid (b,c)$.

2. True or False ? Far any a,b,c in N, if a | bc then a | b or a | c. Justify your answer.

- 3. Use induction to prove that for all n > 0, $1 + 2^1 + 2^2 + ... + 2^n = 2^{n+1} 1$.
- 4. Show that if $a \mid b$ then (a,b)=a.
- 5. Problem 17, on page 59. (In Ed. 2 it is Page 52, problem E7.)

6. Problem 18, on page 59. (In Ed. 2 it is Page 52, problem E8.)

7. Prove that there are three positive integers a, b, and c, with (a,b)>1, and (b,c)>1 and (a,c)>1 but (a,b,c)=1.

8. Problem 24, on page 59. (In Ed. 2 it is Page 52, problem E13.)