Math 1480 Homework Assignment 2 Spring 2008

Due Thursday, April 17.

1. For certain types of 2-digit numbers, there is a shortcut to find their product:

$$25 \times 25 = 625\ , \qquad 22 \times 28 = 616\ , \qquad 23 \times 27 = 621\ ,$$
$$37 \times 33 = 1221, \qquad 41 \times 49 = 2009, \qquad 76 \times 74 = 5624.$$

   (a) Determine the kinds of numbers for which this works.

   (b) Describe the procedure for finding the product in English.

   (c) Explain why it works.

2. Give the quotient and remainder to the division $43203_5 \div 13_5$. Perform the calculation entirely in base 5.

3. What is the smallest composite number that is divisible by none of the primes 2, 3, 5, and 7. (Composite = not prime and greater than 1.)

4. (a) Find GCF$(156, 910)$ and LCM$(156, 910)$.

   (b) Is GCD$(a, b) \times$ LCM$(a, b) = a \times b$ in general? Explain.
   (Hint: look at section 4.3 of the book.)

5. (a) Find GCF$(12, 30, 75)$ and LCM$(12, 30, 75)$.

   (b) Is GCD$(a, b, c) \times$ LCM$(a, b, c) = a \times b \times c$ in general? Explain.