Math 2010, Problem Set #9 **Name:**

Due: Wednesday, June 29th. *Show all work for partial credit!*

1. Given the numbers $a = 3915$ and $b = 825$,

   (a) use the Euclidean Algorithm to find the GCD$(a.b)$

   (b) use your answer in (a) along with the fact that GCD$(a.b) \times$ LCM$(a, b) = a \times b$ to find the LCM(a, b)

2. Find the GCD$(54, 45)$ in two different ways:

   (a) List all divisors of each number and find the largest divisor that appears in both lists.

   (b) Factor into primes and take any shared factors.

3. Find the LCM$(12, 14)$ in two different ways:

   (a) List out multiples of each number to find the smallest multiple that appears in both lists.

   (b) Factor into primes and take the union of the factors.

4. Find all whole numbers x where $1 \leq x \leq 24$ so that GCD$(x, 24) = 1$
   (that is, so that x and 24 are *relatively prime*).

5. While it is always true that $\frac{a \cdot c}{b \cdot c} = \frac{a}{b}$ (we can cancel common factors), it is not always true that $\frac{a+c}{b+c} = \frac{a}{b}$ (we *cannot* cancel common addends).

   Find integers a, b, and c so that $\frac{a+c}{b+c} \neq \frac{a}{b}$. Record your integers, as well as the values of $\frac{a+c}{b+c}$ and $\frac{a}{b}$, below.