Peter Lucas **Homework 4** **Due 09-26-2014**

1. Decpipher the message:

   `NTFC UBMB MEZM H`

   knowing it was encoded with an affine cipher with key $a = 21$ and $b = 19$.

2. Suppose $d = \gcd(30740, 62280)$.
   (a) Find d
   (b) Find k, l such that $d = 30740 \cdot k + 62280 \cdot l$.

3. For each of the following find $a^{-1} \pmod{m}$ or explain why no such inverse exists. That is, find c such that $ac \equiv 1 \pmod{m}$.
   (a) $a = 129343, m = 2329467$
   (b) $a = 733171, m = 2221731$.

4. (Wait until Wednesday) Find $\phi(275400)$

5. (a) Get a picture of you with Globalization RA, PA (other than CaroLynn) or professor (other than me).
   (b) Get a picture of a place to buy food on campus that you have never bought food at.