John Slater   **Homework 4**   **Due 09-26-2014**

1. Decpipher the message:

   UHIP USIZ MFBH

   knowing it was encoded with an affine cipher with key $a = 7$ and $b = 5$.

2. Suppose $d = \gcd(70050, 11445)$.

   (a) Find d

   (b) Find k, l such that $d = 70050 \cdot k + 11445 \cdot l$.

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) $a = 167944, m = 335259$

   (b) $a = 36295, m = 2282046$.

4. (Wait until Wednesday) Find $\phi(8415000)$

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.