Parker Brooks   **Homework 4**   **Due 09-26-2014**

1. Decpipher the message:

   PUYP CBNV CSLQ Q

   knowing it was encoded with an affine cipher with key $a = 19$ and $b = 15$.

2. Suppose $d = \gcd(41468, 87332)$.
   (a) Find d
   (b) Find k, l such that $d = 41468 \cdot k + 87332 \cdot l$.

3. For each of the following find a^{-1} (mod m) or explain why no such inverse exists. That is, find c such that $ac \equiv 1$ (mod m).
   (a) $a = 1439, m = 1766$
   (b) $a = 1547, m = 1307566$.

4. (Wait until Wednesday) Find $\phi(45000)$

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.