

1. Suppose $d = \gcd(42792, 30448)$.
 - (a) Find d
 - (b) Find k, l such that $d = 42792 \cdot k + 30448 \cdot l$.
2. 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) $a = 70918, m = 991539$
 - (b) $a = 570817, m = 1229851$.
3. Decipher the message:

YGVF DIBI BZOB Q

knowing it was encoded with an affine cipher with key $a = 15$ and $b = 6$.
4. (Wait until Wednesday) Break the message:

PEZB EZZE PEZQ GTVM YWVE PGTM

knowing it was encoded with an affine cipher and contains the word(s) "london".
5. (Wait until Wednesday) Find $\phi(135000)$
6.
 - (a) Get a picture of you with Natural World RA, PA (other than JuliAnne) or professor (other than me).
 - (b) Get a picture of a place to buy food on campus that you have never bought food at.