

1. Decipher the message:

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knowing it was encoded with an affine cipher with key  $a = 19$  and  $b = 11$ .

2. Suppose  $d = \gcd(43555, 85963)$ .
  - (a) Find  $d$
  - (b) Find  $k, l$  such that  $d = 43555 \cdot k + 85963 \cdot l$ .
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)  $a = 9485, m = 19308$
  - (b)  $a = 2379, m = 2684488$ .
4. (Wait until Wednesday) Find  $\phi(178200)$
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.