

1. Break the message:

OQXZ XERR JZPK XZFY YL

knowing it was encoded with an affine cipher and contains the word(s) “books”.

2. Encipher “*Panthers*” using hill the key:  $a=17$ ,  $b=15$ ,  $c=15$ ,  $d=2$ . Do the calculation (mod 26).
3. (Wait for Wednesday) Decipher “*EKGRTU*” using hill with matrix:  $\begin{pmatrix} 10 & 24 \\ 25 & 3 \end{pmatrix}$ . This calculation is done (mod 29). Note that the mod is different than the previous problem.
4. (Wait for Wednesday) Find all primes  $p$  for which  $\begin{pmatrix} 3 & 5 \\ 7 & 3 \end{pmatrix} \pmod{p}$  is *not* invertible.
5. (Wait for Wednesday) Find all values of the  $b$  with  $0 \leq b < 25$  such that  $\begin{pmatrix} 1 & 1 \\ b & 1 \end{pmatrix}$  is invertible (mod 26).
6. Find the One Stop Student Center and take a picture of yourself there and email it to me at cparker@sandiego.edu.
7. Look on the website for sporting events at USD. Choose an event in the future that you would be most likely to attend and write that down. I won’t make you actually go to the event but consider doing it, it builds school spirit.