

1. Chuck wants to encrypt a message to send to Colleen using the Hill cipher. Why is  $A = \begin{bmatrix} 4 & 7 \\ 3 & 15 \end{bmatrix}$  a poor choice for an encryption matrix?
2. Decrypt the ciphertext GERXACCCYU with encryption matrix  $\begin{bmatrix} 11 & 1 \\ 2 & 5 \end{bmatrix}$  to learn the secret of success.
3. Decrypt the ciphertext CQFMTIGD with encryption matrix  $\begin{bmatrix} 23 & 21 \\ 17 & 6 \end{bmatrix}$  to find out what kind of shoes ninjas wear.
4. Decrypt the ciphertext NKPMGWON with encryption matrix  $\begin{bmatrix} 11 & 1 \\ 2 & 5 \end{bmatrix}$  to learn what to tell somebody who's asking too many questions.
5. Decrypt the ciphertext YYOUETBEPLMX with encryption matrix  $\begin{bmatrix} 9 & 4 \\ 5 & 7 \end{bmatrix}$  to discover something that you may already know.

Table of Multiplicative Inverses (mod 26)

$a$	1	3	5	7	9	11	15	17	19	21	23	25
$a^{-1}$	1	9	21	15	3	19	7	23	11	5	17	25