Linear Algebra Cryptography Project

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In the following problems, assume the use of the usual 26 letter alphabet with A=0 and Z=25, unless otherwise specified.

1. You intercept the message "SONAFQCHMWPTVEVY," which you know was enciphered using a Hill 2-cipher. An earlier statistical analysis of a long string of intercepted ciphertext revealed that the most frequently occurring ciphertext digraphs were "KH" and "XW" in that order. You take a guess that those digraphs correspond to "TH" and "HE," respectively, since those are the most frequently occurring digraphs in most long plaintext messages on the subject you think is being discussed. Find the deciphering matrix, and read the message.