

Name: \_\_\_\_\_

## Project – Cryptography using Matrices

Now that you have studied and practiced with matrices, we can take a look at how we can utilize them. For this project, you will use matrices to create a message in code. No one else will be able to read your matrix unless you give them your coding matrix.

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### How to ENCRYPT your message:

**Step 1:** Write a message between 15 and 25 characters in length in plain text.

**Step 2:** Convert your message to numbers using the following...

A = 1	H = 8	O = 15	V = 22
B = 2	I = 9	P = 16	W = 23
C = 3	J = 10	Q = 17	X = 24
D = 4	K = 11	R = 18	Y = 25
E = 5	L = 12	S = 19	Z = 26
F = 6	M = 13	T = 20	Space = 0
G = 7	N = 14	U = 21	

**Step 3:** Arrange the message in a matrix with two columns.

**Step 4:** Choose a coding matrix.

\*It must be a 2 x 2 matrix and must contain numbers other than 0 and 1\*

**Step 5:** Multiply your message matrix by the coding matrix you chose.

**Step 6:** Write out your new encrypted message!

### How to DECRYPT your message:

**Step 1:** Arrange the encrypted message in a matrix with two columns.

**Step 2:** Find the inverse of the coding message.

**Step 3:** Multiply the message matrix by the inverse of the coding matrix.

**Step 4:** Convert your message back to letters using the key from the front of this page.