

Name _____ Period _____

Example: Let's encode the message MEET ME MONDAY using the encoding matrix $A = \begin{bmatrix} 1 & -2 & 2 \\ -1 & 1 & 3 \\ 1 & -1 & -4 \end{bmatrix}$

1) Break the message into symbol groups each containing 3 letters:

2) First, change the message into numbers by replacing each letter with a number as follows: (0 is assigned to a space).

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

3) Multiply each symbol group by the encoding matrix to produce an encoded group:

4) Recombine into a single string of numbers. This is the coded message:

To decode:

1) Find the inverse of the encoding matrix and store it in B to make a decoding matrix.

2) Break the encoded message into symbol groups of 3 numbers:

3) Multiply each symbol group by the decoding matrix:

4) Use the letter-number map from above to convert the numbers back into letters:

5) Recombine the original message.

The following message was encoded using the same A matrix. Use the decoding matrix B to decode this message:

5 -5 -33 -1 1 -2 9 -21 24 26 -40 -27

1 -1 -23 22 -43 34 13 -27 12 17 -17 -69

23 -28 -62 8 -13 -3 31 -56 26 -3 -12 84

11 -30 49 26 -39 -31

Try encoding your own message (a minimum of 30 numbers) using matrix [A]. Give the encoded number string along with the translation below: