

Assignment

Substitution Ciphers – Monoalphabetic & Polyalphabetic

Show all your work/computations.

1. Decipher the following secret message which was enciphered using an additive cipher with a key of 9

E	X	C	N	N	J	A	U	H	J	W	M	X	O	C	N	W
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2. Decipher the following secret message which was enciphered using a multiplicative cipher with a key of 19

V	Q	S	D	P	W	Y	F	J	O	D	Q
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3. Encipher the word 'true' using an affine cipher with additive key 4 and multiplicative key 7

4. Decipher the following secret message which was enciphered using an affine cipher with an additive key of 5 and a multiplicative key of 9

W	X	I	L	T	X	O	P	Z	L	Y	H	B	W	W
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5. Encipher the word 'cool' using a polyalphabetic cipher based on the substitution chart shown below.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
I	L	O	R	U	X	A	D	G	J	M	P	S	V	Y	B	E	H	K	N	Q	T	W	Z	C	F
Y	D	I	N	S	X	C	H	M	R	W	B	G	L	Q	V	A	F	K	P	U	Z	E	J	O	T
W	D	K	R	Y	F	M	T	A	H	O	V	C	J	Q	X	E	L	S	Z	G	N	U	B	I	P
C	L	U	D	M	V	E	N	W	F	O	X	G	P	Y	H	Q	Z	I	R	A	J	S	B	K	T

6. Decipher the word 'SQJMC' which was enciphered using a polyalphabetic cipher based on the substitution chart shown above.

7. Encipher the phrase 'this is cool' using a polyalphabetic cipher based on the following algorithm:

- Letter positions congruent to 1 → keyword POLY
- Letter position congruent to 2 → additive key 11
- Letter positions congruent to 3 → multiplicative key 3

8. Decipher the phrase 'RECXNSKW' using a polyalphabetic cipher based on the following algorithm:

- Letter positions congruent to 1 → keyword POLY
- Letter position congruent to 2 → additive key 11
- Letter positions congruent to 3 → multiplicative key 3