

## Directed Work N° 2

### Exercise 1: Caesar Cipher

1. What does "CAESAR" become with a shift of F?
2. What key do we need to make "CAESAR" become "MKOCKB"?
3. What key do we need to make "CIPHER" become "SYFXUH"?
4. Use the Caesar cipher to encrypt your first name
5. With any encryption method, we need to be able to decrypt our ciphertexts.

### Exercise 2: Vigenère Cipher

1. Use the key "CODE" to encrypt the sentence "TO BE OR NOT TO BE".
2. Use your own key and phrase and encrypt it using the Vigenère cipher.

### Exercise 3: Affine cipher

1. Encrypt the word "ELECTION" using the Affine cipher with key (3, 5).
2. Here is a word encrypted using the Affine cipher with key (17, 3): "LHCT"  
-Find the plaintext.

### Exercise 4: Playfair

1. Give the Playfair matrix for the key "security".
2. Encrypt the message " confidential information ".

### Exercise 5: Hill cipher

Here is a text encrypted using the Hill cipher with key K:

$$K = \begin{pmatrix} 3 & 4 \\ 2 & 5 \end{pmatrix}$$

Ciphertext: YH UM IY GE PG RY RV OG ZI VN IH

- Find the plaintext.

