**Introduction to Cryptography**

**Cipher 1: Grid Cipher**

**Directions:** The grid below maps English letters to coordinates. Use the grid to translate the Ciphertext into English. *Hint: The first number in each pair is the column number.*

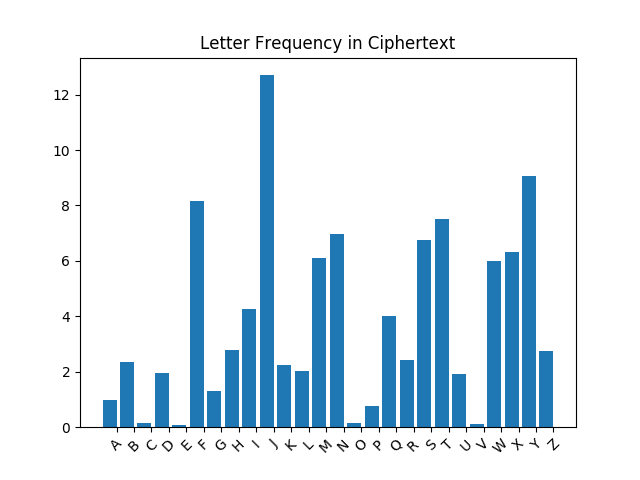
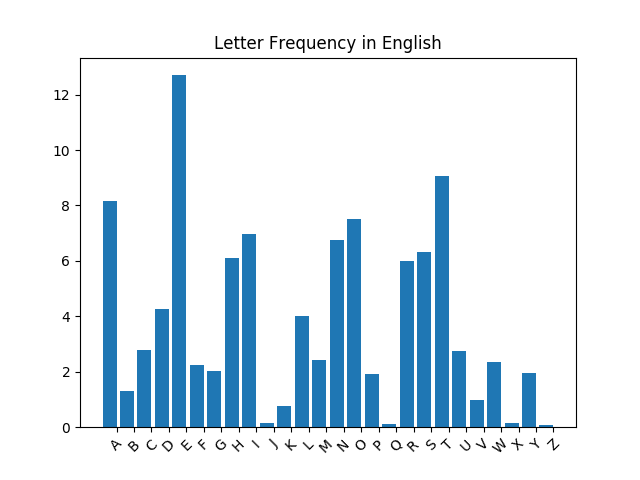
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| 1 | **A** | **B** | **C** | **D** | **E** |
| 2 | **F** | **G** | **H** | **I/J** | **K** |
| 3 | **L** | **M** | **N** | **O** | **P** |
| 4 | **Q** | **R** | **S** | **T** | **U** |
| 5 | **V** | **W** | **X** | **Y** | **Z** |

Ciphertext: 3 4 5 1 1 5 5 1 3 3 4 4 4 5 4 3 3 3 5 1

S E V E N T Y O N E

**Cipher 2: Caesar Cipher**

**Directions:** The Caesar cipher is one of the most widely known encryption techniques. It is a substitution cipher where each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. Use the frequency graphs below to answer the questions. Then use the table to translate the Ciphertext into English.



1. Which letter in the English text maps to the letter **J** in the cipher text? \_\_E\_\_\_
2. How many letters away is **J** from your answer to question 1? \_\_5\_\_\_
3. Write out the new cipher text alphabet by shifting every letter by the answer to question two.

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

1. Use the mapping between the ciphertext alphabet and the English alphabet to decrypt the ciphertext below.

**THIRTYFOUR**

**Cipher 3: Columnar Transposition**

**Directions:** In columnar transposition, the message is written in rows of a fixed length. This length can be any number. Our length is 7. Write the Ciphertext into rows, then the columns can be read to reveal the message.

Ciphertext: TWUNINEHEETSTNERSHSYQATTRESENOIEVERSQOEEVA

Start here





T W U N I N E

H E E T S T N

E R S H S Y Q

A T T R E S E

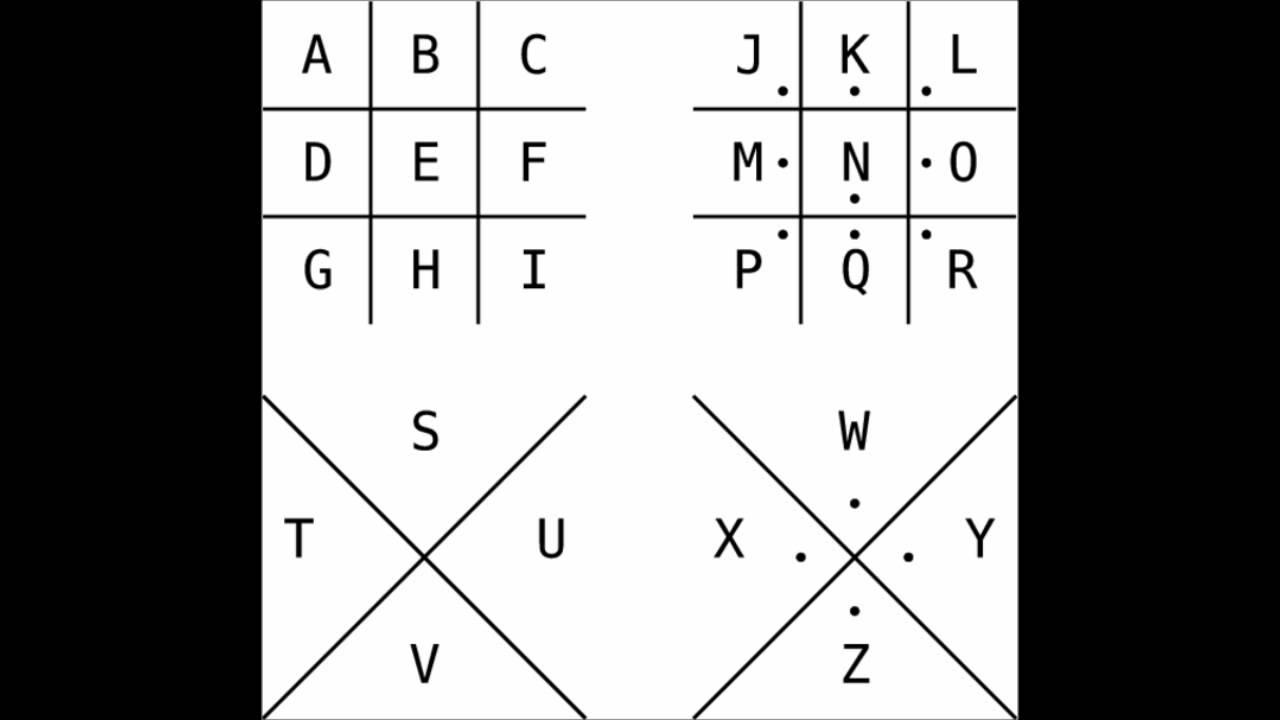
N O I E V E R

S Q O E E V A

Find the answer by reading the columns

**Cipher 4: PigPen Cipher**

**Directions:** The pigpen cipher is a geometric substitution cipher where letters are replaced with symbols. The key below provides a mapping of letters to symbols. Use the key to translate the Ciphertext into English.



**Key:**



**Ciphertext:**

**Answer: T H E A N S W E R I S T W O**