

An Application of Frequency Tables - Code Breaking

Here is a secret message, written using a *Substitution Code*. In a substitution code, each letter of the alphabet is replaced by another letter. Your job is to break the code, and find the secret message.

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

1. We will use statistics to help us. Make a frequency distribution table of the letters in the coded message.
2. The most frequent letter is probably 'E'. Write an 'E' underneath each place this letter appears in the message.
3. The second most frequent letter is probably 'T'. Write a 'T' underneath each place this letter appears in the message.

4. A very common word in English is 'THE'. If this word appears several times in the message you should be able to guess what letter represents 'H'.
5. A strong clue in breaking a code is some knowledge of certain words that are likely to appear in it. For instance, this message mentions mathematics. If you can find where the word 'MATHEMATICAL' appears, you will know what several more letters represent. You may also wish to look for the word 'STATISTICS'.
6. The most frequent letters used in the English language are:
E, T, A, O, and N
See if you can use this information to find out which letters stand for O and N.
7. Solving the remaining letters is now up to you. What does the message say?