

Frequency Analysis

This method is used for codes called “mono-alphabetic” ciphers. That is a code where each letter in the alphabet is replaced by another letter, but this is done in a random order.

There are **403,291,461,126,605,635,584,000,000** different possible combinations of letters, so it is not possible to check them all!

To crack this code you must show a high level of *resilience* and *perseverance*. You need to think about which letters occur most often, whether there are any repeated letters and whether there are any single letters. It is always a good idea to think about commonly occurring 3 letter words such as “the” which often appears at the beginning of a message.

This table shows the frequencies of different letters in the English language. They are ordered from the most frequent to the least frequent.

e	t	a	o	i	n	s	h	r	d	l	u	c
12.7	9.1	8.2	7.5	7.0	6.7	6.3	6.1	6.0	4.3	4.0	2.8	2.8
m	w	f	y	g	p	b	v	k	x	j	q	z
2.4	2.4	2.2	2.0	2.0	1.9	1.5	1.0	0.8	0.2	0.2	0.1	0.1

Common pairs are consonants TH and vowels EA. Others are OF, TO, IN, IT, IS, BE, AS, AT, SO, WE, HE, BY, OR, ON, DO, IF, ME, MY, UP.

Common pairs of repeated letters are SS, EE, TT, FF, LL, MM and OO.

Message from 1943

RBU XI MTN XVM ZXESN MTWRBUK CWKRP RJW GESSEWT
RWTW WC GUKYBMTR VBEDV

CLUE: Codebreakers at Bletchley know that this message contains information about **ships** from the **UK** and **USA**. They think that those keywords (highlighted in bold) will be in the message.