

# How2

## How2 use a codeword cipher to encrypt a message

### What is a codeword cipher?

A codeword cipher uses a code word, which is chosen by the encrypter, which is inserted at the beginning of the alphabet, with all other letters (which didn't appear in the codeword) coming after it.

The best type of word to use is one that doesn't have repeated letters. This is because once a letter has been used (and it corresponds with a plaintext letter) then you can't repeat it. So the codeword SUPERMAN works well because each letter only appears once. But the codeword SUPERGIRL isn't quite so easy to use as R appears twice (once at the end of SUPER and once in GIRL).



The grids below show how this works.

#### CODEWORD: SUPERMAN

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

To make the grid above...

1. Created a two-row table with the cipher text in the top row (green text) and the plaintext in the second row (black text).
2. Put the SUPERMAN code word in the first eight cells, above the plaintext letters A – H.
3. Filled in the top row with the rest of the alphabet (in order) leaving out the letters in the word SUPERMAN.
4. The bottom row is plaintext, and the cipher text is read off the top row (green letters).

#### CODEWORD: SUPERGIRL

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

To make the grid above...

1. Used the same layout of table, but used SUPERGIRL as the codeword
2. As SUPERGIRL has R twice, and the first R (in SUPER) is matched with E, the second R is left out. So the codeword SUPERGIRL actually appears as SUPERGIL in the grid. That's why choosing a codeword with no repeated letters works better!
3. Then the alphabet is laid out again, but the cipher will be different because MAN is replaced with GIL.

Here is a blank cipher grid for you to use!

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