

The Alexander Cipher:

The Alexander Cipher is a cipher based on the Vigenère cipher. To use it to encrypt a message, you need a keyword and an Alexander square.

To create an Alexander Square:

Make a list of all the symbols you wish to be able to use. I suggest just the alphabet, numbers, and punctuation for maximum ability, but whatever characters are in it are up to you. Here, I will use the alphabet as an example:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Now repeat it over and over again, but shifting to the right and moving excess characters back to the beginning until you would have come back to the original list. Due to how big these squares usually are, I would recommend doing this on a computer. Here's an example from the alphabet above:

ABCDEFGHIJKLMNOPQRSTUVWXYZ

ZABCDEFGHIJKLMNOPQRSTUVWXYZ

YZABCDEFGHIJKLMNOPQRSTUVWXYZ

XYZABCDEFGHIJKLMNOPQRSTUVWXYZ

WXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

VWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

UVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

TUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

STUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

RSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

QRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

PQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

OPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

NOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

MNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

LMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

KLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

JKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

IJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

HJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

GHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

FGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

EFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

DEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

CDEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

BCDEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ

Then, label the columns and rows with the symbols of your character list:

ABCDEFGHIJKLMN OPQRSTUVWXYZ

AABCDEFGHIJKLMN OPQRSTUVWXYZ

BZABCDEFGHIJKLMN OPQRSTUVWXY

CYZABCDEFGHIJKLMN OPQRSTUVWX

DXYZABCDEFGHIJKLMN OPQRSTUVW

EWXYZABCDEFGHIJKLMN OPQRSTUV

FVWXYZABCDEFGHIJKLMN OPQRSTU

GUWXYZABCDEFGHIJKLMN OPQRST

HTUVWXYZABCDEFGHIJKLMN OPQRS

ISTUVWXYZABCDEFGHIJKLMN OPQR

JRSTUVWXYZABCDEFGHIJKLMN OPQ

KQRSTUVWXYZABCDEFGHIJKLMN OP

LPQRSTUVWXYZABCDEFGHIJKLMNO

MOPQRSTUVWXYZABCDEFGHIJKLMN

NNOPQRSTUVWXYZABCDEFGHIJKLM

OMNOPQRSTUVWXYZABCDEFGHIJKL

PLMNOPQRSTUVWXYZABCDEFGHIJK

QKLMNOPQRSTUVWXYZABCDEFGHIJ

RJKLMNOPQRSTUVWXYZABCDEFGHI

SIJKLMNOPQRSTUVWXYZABCDEFGH

THIJKLMNOPQRSTUVWXYZABCDEFG

UGHIJKLMNOPQRSTUVWXYZABCDEF

VFGHIJKLMNOPQRSTUVWXYZABCDE

WFGHIJKLMNOPQRSTUVWXYZABCD

XDEFGHIJKLMNOPQRSTUVWXYZABC

YCDEFGHIJKLMNOPQRSTUVWXYZAB

ZBCDEFGHIJKLMNOPQRSTUVWXYZA

You may also wish to use spreadsheet software (i.e. Microsoft Excel, Apple Numbers, Google Sheets, LibreOffice Calc) instead of word processor software (i.e. Microsoft Word, Apple Pages, Google Docs, LibreOffice Writer) because they will allow you to make lines in between these words that help distinguish one row from the other. **To make sure each row is spaced properly, either use a spreadsheet application or a monospaced font (as used above).**

To Encrypt A Message:

Pick a keyword. This keyword can include any character included in the character list of your Alexander Square. Your keyword can be an arbitrary arrangement of these characters, like *calculator* or *ghuqhwe*. Hell, it can even be *h#1230%* if your character list includes those characters. Write down your message.

Write the keyword beneath it so that its first character is right underneath your message's first character. Repeat the keyword but replace each character with the character that comes before it in your character list. For example, keyword *bingo* would become *ahmfn*, then *ahmfn* would become *zglem*. Whenever you must go before the first character of your character list, go back around to the last character of the character list (*a* becomes *z* when using the alphabet). Repeat this until every letter in your message has a letter of the keyword or its derivatives to generate the keyword derivative list. The below example has every other derivative bolded:

Message example: HelloworldIlikeciphers

K.D.L. example: cats**bz**stayrs**zx**qrywpq**xu**

Now, navigate the top of the Alexander Square until you are at the column labeled with the first letter of your message (*h* in example above). Go down until you are at the first letter of your keyword derivative list (*c* in example above). Check to see what letter row it is at (*f* in example above). This is the first letter of your encrypted text. Repeat this again and again with the second letters of your message and keyword derivatives, then with the third, and so on until you have encrypted all of your message (*festnxwylfrtknolktsouy* in example above).

To Decrypt A Message With A Known Keyword:

Write down the encrypted message. Generate the keyword derivative list (as detailed in the 2nd paragraph of *To Encrypt A Message*) under the encrypted message. Navigate the left side of your Alexander Square until you are at the row whose letter is the first letter of your encrypted message (*f* in example above). Move to the right until you are at the first letter of your keyword derivative list (*c* in example above). Check the letter of this row (*h* in example above). This is the first letter of your decrypted message. Repeat this with the first, second, third, etc. letters of your encrypted message and keyword derivative list until you are done.

Extra Little Things:

- The longer your keyword is, the stronger your cipher will be.
- When I say that your character list can include any symbol, I mean *any* symbol. It doesn't even have to be English! The same applies to your keywords.
- **NEVER give your keyword(s) to anyone you don't trust. Only give them to the people who you want to be able to read your messages!**