

Cracking Ciphers

Overview: Cryptograms are solved by making good guesses and testing them to see if the results make sense. Through a process of trial and error, you can usually figure out the answer. Knowing some facts about the English language can help you to solve a simple substitution cipher. For example, did you know that an E is the most commonly-used letter in the English alphabet? It's also the most commonly-used letter to end a word.

Materials

- Pencil
- Paper

Activity: It helps to have a lot of words to work with so that you can begin to recognize patterns in the code. Here are some examples:

Single-letter words will most likely be either **A** or **I**

The most frequent two-letter words in English are **OF**, **TO**, and **IN**.

The most frequently used three-letter words are **THE** and **AND**.

The most commonly used letter in English is E, then T, A, O, N.

The most common letter that appears at the end of words is E.

The most common letter that appears at the beginning of words is T.

Finally, the most frequently occurring four-letter word in English is **THAT**.

Additional tips include the fact that **Q** is almost always followed by **U**, and that **N** often (but not always) follows a vowel. Finally, if two code symbols occur in a row, they could be a consonant combination such as **LL**, **EE**, **SS**, **OO**, **TT**, etc.

The real trick to this is to try something, and then if it doesn't work, go back and try something else. Get lots of practice by checking in newspapers and magazines for these popular puzzles. If you really like them, you can find puzzle books full of cryptograms. You'll be an expert cipher solver in no time!

Let's break the code *without* using a key:

ZU HO UD CUZ ZU HO ZSGZ AF ZSO JKOEZAUC

To begin with, look at the words that seem to form certain patterns. Do you notice the two-letter word "HO" and "ZU?" We can't tell yet what they are, so let's keep looking for something we can identify.

Check out the four-letter word "ZSGZ.". The first and the last letter "Z", and my bet is that the word is "THAT." If so, we already know three letters! Let's try it:

Z	U	H	O	U	D	C	U	Z	Z	U	H	O	Z	S	G	Z	A	F	Z	S	O	J	K	O	E	Z	A	U	C	
T							T	T					T	H	A	T			T	H										T

Now look at "ZSO." What word do you think it is? My guess is "THE," so now O = E. Replace all O's with E's:

Z	U	H	O	U	D	C	U	Z	Z	U	H	O	Z	S	G	Z	A	F	Z	S	O	J	K	O	E	Z	A	U	C	
T		E					T	T			E			T	H	A	T			T	H	E			E					T

Check out "ZU." What word do you think it is? What about "TO?" Let's substitute U = O:

Z	U	H	O	U	D	C	U	Z	Z	U	H	O	Z	S	G	Z	A	F	Z	S	O	J	K	O	E	Z	A	U	C
T	O		E	O			T	T	O		E			T	H	A	T	I		T	H	E			E		T	O	

Look at the last word: "J K O E Z A U C." What do you think that word is? Notice the T_O_ at the end of the word. My guess is that those last four letters are "TION." So Z = I and C = N:

Z	U	H	O	U	D	C	U	Z	Z	U	H	O	Z	S	G	Z	A	F	Z	S	O	J	K	O	E	Z	A	U	C		
T	O		E	O			N	O	T			E			T	H	A	T	I		T	H	E			E		T	I	O	N

If so, then you can guess at the word – my guess is that it's "QUESTION."

Try to read the sentence from time to time to see if you can figure it out without having to know all the letters first. I read it over, and this popped into my mind:

TO BE OR NOT TO BE THAT IS THE QUESTION. Which also turns out to be the answer. ☺

Now it's your turn! Work out the exercises below. (You'll find answers at the back of this book.)

Exercises

1. What does it mean by "cracking a cipher?"
2. In there a difference between cracking and decoding a cipher?
3. What is very important that a person should know before beginning the cracking process?
4. What is the most common letter of alphabet that is usually at the end of a word?
5. What is the most common letter that is usually at the beginning of a word?
6. If you have a letter all by itself, what is it most likely to be?
7. What are two of the most common two character words in sentences?
8. What are two of the most common three character words in sentences?
9. What is the most common four character word in sentences?

Answers to Exercises: Cracking Ciphers

1. Is the idea of getting the original message from the cipher without using the key
2. Cracking implies getting the original message of the cipher without the key while with decoding, the key is used
3. The person has to be familiar with the common letters and words used in English
4. E
5. T
6. I,A
7. OF,TO
8. THE,AND
9. THAT