

It is not always necessary to use a code or cipher to hide the meaning of a message. It can also be done just by using some re-arrangement of the message without changing any of the actual letters.

Take the sentence:-

I LIKE DRINKING LEMONADE WITH ICE IN

By re-grouping the letters but keeping them in the same order we can make it look like nonsense:-

ILIKE DRINK INGLE MONAD EWITH ICEIN

or

ILI KED RIN KIN GLE MON ADE WIT HIC EIN

or

IL IKED RINK IN GLEM ON A DEW IT HICE IN

Even without re-grouping, if the whole sentence is written backwards it is not easily readable.

NI ECI HTIW EDANOMEL GNIKNIRD EKIL I

It is much worse if it is written backwards and re-grouped:-

NIEC IHTI WED ANOM ELGNI KNIR DEKILI

or

NIECI HTIWE DANOM ELGNI KNIRD EKILI

or

NIE CIH TIW EDA NOM ELG NIK NIR DEK ILI

Even if the words are kept in the correct order but each word is written backwards it can look like nonsense:-

I EKIL GNIKNIRD EDANOMEL HTIW ECI NI

Exercise 1

Try making sense of these. Each is a perfectly ordinary sentence in English which has been turned into apparent nonsense by using tricks like those explained above.

1. THEC ATSA TONT HEMAT
2. TOW INTH ERA CEYO UMU STR UNF AST
3. WEN EED WAT ERA NDA IRS OAS TOL IVE
4. ONAHO TDAYA COOLD RINKI SNICE
5. LIAT OT DAEH MORF OG TAC A GNIKORTS NEHW
6. TAM EHT NO TAS TAC EHT
7. ECINS IKNIR DLOOC AYADT OHANO
8. SGOD DNA STAC EKIL ELPOEP TSOM
9. EMOS SDRIB NAC YLF YREV HGIH
10. RUO FEK AMO WTD NAO WT
11. REEB SI EDAM MORF YELRAB DNA SPOH
12. PIHSG NILIAS AROFT SEBER ASYAD YDNIW

Another way of re-arranging the letters in a message is this one.

Again using the sentence:-

I LIKE DRINKING LEMONADE WITH ICE IN

First, re-write it on two lines dropping every second letter:-

I	I	E	R	N	I	G	E	O	A	E	I	H	C	I
L	K	D	I	K	N	L	M	N	D	W	T	I	E	N

Next, close up the gaps and write the second line immediately after the first:-

I I E R N I G E O A E I H C I L K D I K N L M N D W T I E N

Finally, put it into groups of five:-

I I E R N I G E O A E I H C I L K D I K N L M N D W T I E N

There are variations. Like writing the second line before the first:-

L K D I K N L M N D W T I E N I I E R N I G E O A E I H C I

which doesn't look so very different in this case. (It depends upon the number of letters in the message.)

We could write the message on three lines:-

I	K	R	K	G	M	A	W	H	E
L	E	I	I	L	O	D	I	I	I
I	D	N	N	E	N	E	T	C	N

and now have a choice of how to arrange them. Using the order 1, 2, 3 gives:-

I K R K G M A W H E L E I I L O D I I I I D N N E N T C N

while using the order 2, 1, 3 gives:-

L E I I L O D I I I I K R K G M A W H E I D N N E N T C N

Again, not a lot of difference, but it could be with a different size of message.

Recovering the Message

If you know a message has been written using this method it is not too difficult to recover the original message.

For instance, starting with

A E T O A T C H T M H N T S A E T

Could it be a two-line message? It has 17 letters so we will divide it into 9 and 8:-

A E T O A T C H T M H N T S A E T

and put it into two lines (spaced out):-

A	E	T	O	A	T	C	H	T
M	H	N	T	S	A	E	T	

then fit one line into the other to get:-

A M E H T N O T A S T A C E N T T

which does not look too promising at first. But, looking at it from right to left, several words become apparent. So we write it out in reverse order:-

T T H E C A T S A T O N T H E M A

and that is just about clear, except that the first T seems to be at the wrong end. This is because we split the message 9 and 8 instead of the correct 8 and 9.

Exercise 2

Try making sense of these. Each is a perfectly ordinary sentence in English which has been turned into apparent nonsense by using tricks like those explained on the previous sheet.

1. CTLKT STNOR AASIE OIOYU LP
2. EESEP IHCOO IENVR LEWTA RCDL
3. LAEED HMNYO ESONS OCNPE SSNTE OETMA SOAYU A
4. YUEEK OWAYU ADTLY URONV RNWHT OCNOI LOTY
5. GELEL OAOEM IATHP UNTSE VLHEY CTHEN
6. DOOHE OHEIE IOTUT LNIIS ENNTC HIWLT FDG
7. HSTTL SOOOT YYAII OFYEA HMKGD RU
8. INDRO YOILE MENSN WLEOM EO
9. NSMAN HKOTI EASRD OWNRY AS
10. TGFEF LISOD ATCHI NTOLW GDNSA

Yet another way of mixing up the letters of a message is by using a matrix. This means putting the message in a rectangular form, using one direction to write it down and another direction to read it off for sending. Using the same message as before:-

I LIKE DRINKING LEMONADE WITH ICE IN

This message has 30 letters so we can make a rectangle either 5 by 6 or 6 by 5. We will do it both ways to see how they compare.

①	5 by 6	②	6 by 5
	I L I K E D		I L I K E
	R I N K I N		D R I N K
	G L E M O N		I N G L E
	A D E W I T		M O N A D
	H I C E I N		E W I T H
			I C E I N

Notice that the message was put into the matrices by writing horizontally (\rightarrow) left to right so that the final message, as it is to be sent, is copied off vertically (\downarrow) downwards.

Here then are the final messages (for both cases) written in groups of five and ready for sending:-

① IRGAH LILDI INEEC KKMWE EIOII DNNTN

② IDIME ILRNO WCIIG NIEKN LATIE KEDHN

This matrix method is really the same as the previous one (writing it on different lines, only it is easier to use a 5 by 6 matrix than it is to write the message on 6 lines.

Recovering the Message

If you know the size of the matrix that was used to mix up the original message then it is easy to recover the message. But, as long you know the matrix method has been used, it is still not too hard to recover the message. Consider this one, which is known to have been re-arranged by a matrix:-

YLWTO SEIUE ASWES PIHYB LOIR

There are 24 letters, so the matrix must have been one of these:-

3 by 8 8 by 3 6 by 4 4 by 6 2 by 12 12 by 2

The last two are not very likely as they do not mix the message up enough, so we will try the first four, writing the message into each of them and looking for recognisable words.

YLWTO SEIUE ASWES PIHYB LOIR

Remembering to write the message horizontally → we can make these four matrices:-

①	②	③	④
3 by 8	8 by 3	6 by 4	4 by 6
Y T E E W P Y O	Y U I	Y E W Y	Y O U W I L
L O I A E I B I	L E H	L I E B	L S E E H O
W S U S S H L R	W A Y	W U S L	W E A S Y I
	T S B	T E P O	T I S P B R
	O W L	O A I I	
	S E O	S S H R	
	E S I		
	I P R		

Since the messages were put in vertically (↓) we must look for words horizontally (→)

Matrix number 4 is the only one that offers several words: YOU SEE EASY so we write that one out in full:-

YOUWILLSEEHOWEASYITISPBR

and then divide it up into words:-

YOU WILL SEE HOW EASY IT IS PBR

The last three letters on the end seem out of place. In fact they were put in only to make the letters up to a convenient number (in this case 24) and have nothing to do with the message. This is a device often used in writing secret messages. Such letters are called **nulls**.

Exercise 3

Try making sense of these. Each is a perfectly ordinary sentence in English which has been turned into apparent nonsense by the matrix method. For the first four the size of the matrix has been given (number of letters down by number across). Remember to write in the message vertically (↓) and read it horizontally (→).

1. TTNAH STTEA HLCTE HAOME 4 by 5
2. SHAOP IEESN OBNLS ASLDP OSSE 6 by 4
3. SNAYE ERONY LUDAY CMSAA OESN 4 by 6
4. COURL OMSTA MYEHN EHFES TOOPJ 5 by 5
5. TEITR WTOHE GSEYY UREHA TNFR
6. MELAD OOITD SPKSO TLEAG PECNS
7. PNMLD EEHAA ETSLO EPNST CEOE
8. BHYOR ETMIM OENOM YGNYK TEHE
9. TYGES UHWIC TAEIV ROLSL EYHP LSTOP
10. GUTNC APOGE MGHAD EOITH IIDON SNINE