

Disciplines?

Relevance?

Meaning?

1010

mixlplik

igpay atinlay

Codes Ciphers

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

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Codes and Ciphers

Codes and ciphers have existed for hundreds of years.

People have always had the need to hide secrets and messages.



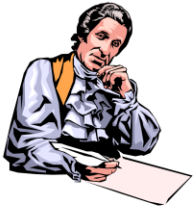
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Codes and Ciphers

Caesar used ciphers and codes as did the founding fathers of the United States.

Thomas Jefferson created ciphers and code systems during the American Revolution.



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Codes and Ciphers

Substitution ciphers are very common ciphers. Letters can be reversed or rotated a certain amount.

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
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

Original Message : hello

Encoded Message : fcjjm

Add stuff here

Codes and Ciphers

A permutation can be used to make the substitution cipher harder to break.

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

Original Message : hello

Encoded Message : qmvvt

Add stuff here

Codes and Ciphers

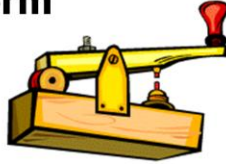
Substitution ciphers are broken using letter frequencies. Certain letters occur in the English language more frequently than others. E occurs most frequently.

A	B	C	T
8.167	1.492	2.782	9.056

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Codes and Ciphers

Morse code is a very common form of cipher.



A	▪ _
B	_ ▪ ▪ ▪
C	_ ▪ _ ▪
D	_ ▪ ▪
E	▪

Original Message : bad

Encoded Message : _ ▪ ▪ ▪ ▪ _ _ ▪ ▪

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Codes and Ciphers

Transpositional ciphers come in many shapes and sizes.

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

These ciphers involve storing a message in a grid and then encoding the message using a specified pattern.

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Codes and Ciphers

**A column cipher
could just run down
the columns to make
a coded message.**

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

Run down the columns starting with column 0.

CODED MESSAGE : IEKWCLWIIOOONTDVRGHE

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Codes and Ciphers

A spiral cipher typically spirals in or out and starts at a specified corner.

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

Spiral from top left down and in

CODED MESSAGE : IEKWCODEHGRVOLWIITNO

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Codes and Ciphers

A pigpen cipher uses different shapes and dots to encode letters. The Freemasons are credited with creating the pigpen cipher.

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

HELLO

□□<<□

Add stuff here

Codes and Ciphers

Letters can be placed in any order in the pigpen cipher.

A	B	C
D	E	F
G	H	I

J	
K	L
M	

N	O	P
Q	R	S
T	U	V

W	
X	Z
Y	

HELLO

⌐□<<⌐

Add stuff here

Codes and Ciphers

A playfair cipher uses a code phrase and a 5X5 grid. No duplicate letters are placed in the grid.

The remaining letters of the alphabet are used to fill the grid.

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

It was used in WWI and WWII.



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Codes and Ciphers

The letters to be encoded must be located in the grid.

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

FW is encoded to **BR**.

SV is encoded to **UX**.

EA is encoded to **GP**.

RD is encoded to **NH**.

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Codes and Ciphers

**Use the grid to
encode pairs of
letters.**

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

MESSAGE TO CODE : WH AT

CODED MESSAGE : RT TH

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Codes and Ciphers

The enigma machine was used by the Nazi regime during World War II to encode messages.

[Dave Reed's Engima Machine](#)



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Goto Wikipedia
Research Ciphers
Pick Any Cipher

Where are codes and ciphers used today?



Codes and Ciphers

MPEG3 and MPEG4 files are encoded files.

MPEG stands for Moving Pictures Expert Group. MPEG files are compressed files.



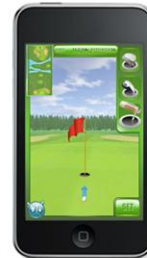
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Codes and Ciphers

MP3 files are used to compress CD quality files. The compression algorithm typically compresses files at a 10mb to 1mb-2mb rate. A 40 mb file would compress roughly to 4mb-8mb.



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Codes and Ciphers

You must have an MPEG3 compatible player to play an MPEG3 encoded file.



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Create a Cipher Program Using Any Language / Tool