LEGO UROJURO7

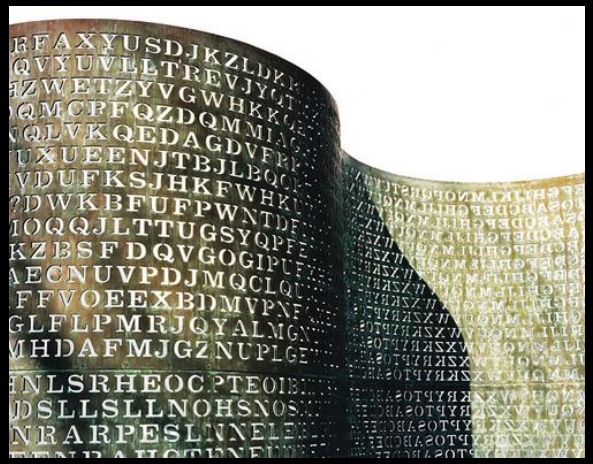
Code Breaking

Codes appear for many reasons.

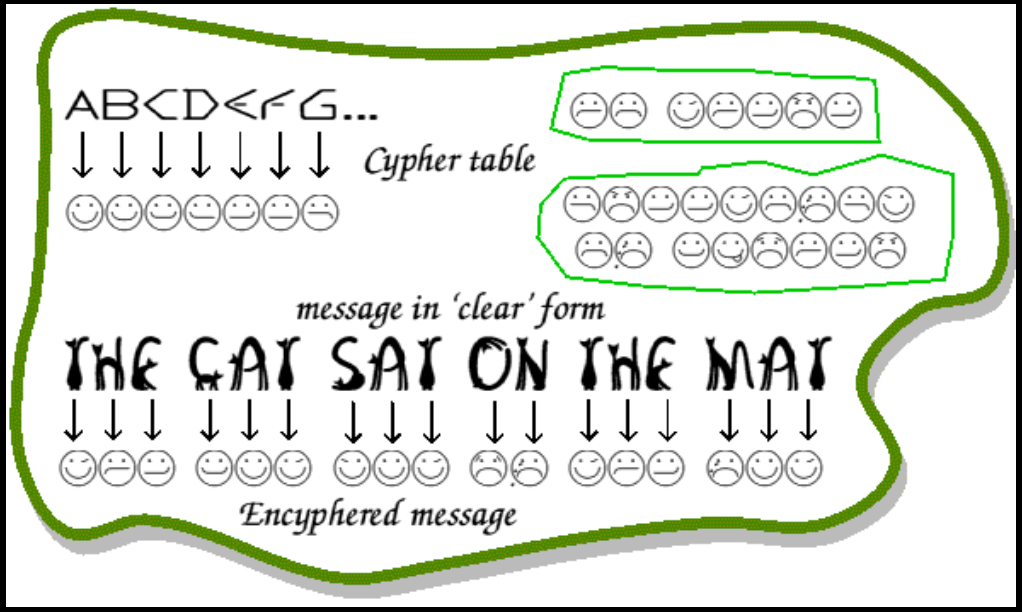
They are usually used to hide information.

One of the biggest places for codes is on the internet.

Everything you send on the internet is encoded so that hackers do not have access to everyone's private information.

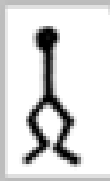


We are going to look at substitution codes.

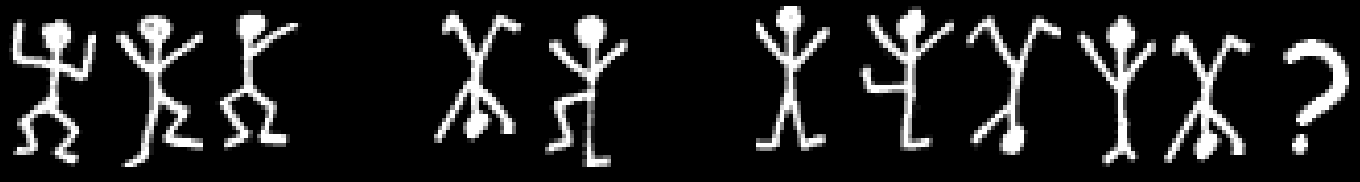


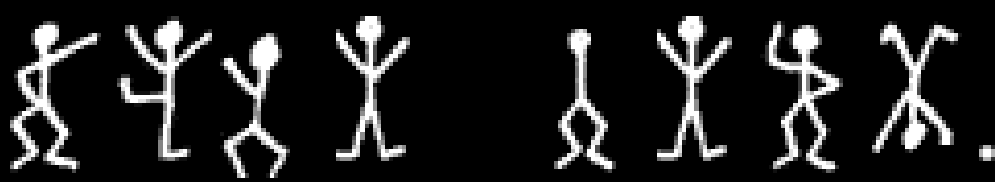
These are where letters are changed to make things harder to read.

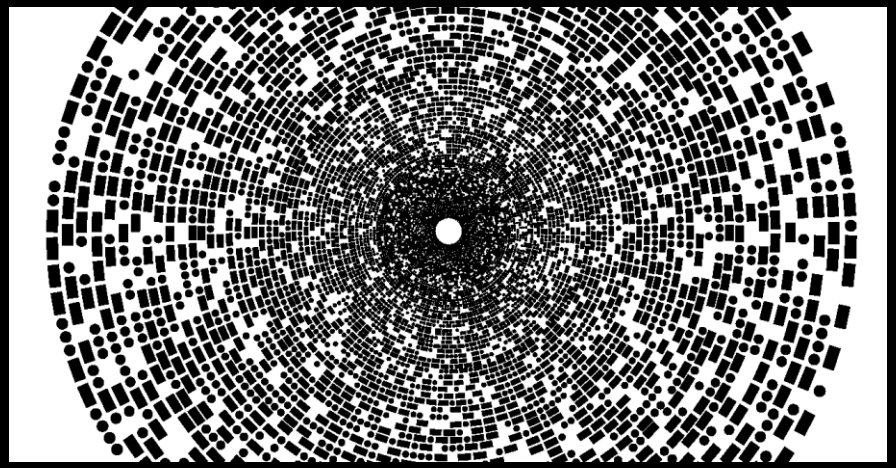
During one of Sherlock Holmes's adventures, he comes across "The Dancing Men Cipher"

a	b	c	d	e	f	g	h	i	j	k	l	m
												

n	o	p	q	r	s	t	u	v	w	x	y	z
												







One of the most common codes people know something about is Morse Code.

Before the internet there were phones…

….and before phones there were telegrams…

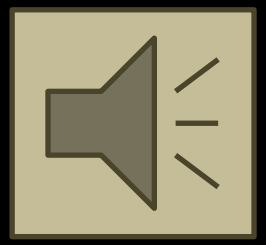
… and telegrams were sent using Morse Code.

Charges to pay
RECEIVED
POST OFFICE
TELEGRAM
No.
Prefix. Time handed in. Office of Origin and Service Instructions. Words
72
From
CROYDON T.I. 16 APR 1945 SURREY
4.13 EDINBURGH T 15
SGT F H STEEL 22 MEADVALE ROAD CROYDON
AWARDED BEM HEARTIEST CONGRATULATIONS = LT COL SHARP
For free repetition of doubtful words at office of delivery. Other enquiries "GRAMS ENQUIRY" or call, with this form
ted by this form, and, if possible, the envelope

Morse Code is very hard to hear and work out without lots of practice.

It is made up of quick clicks for dots, longer clicks for dashes, short breaks between letters, and longer breaks between words.

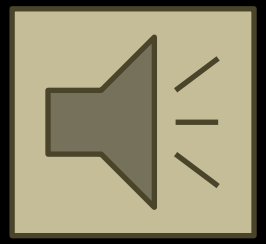
Listen to the sound of a short Morse Code Message. Then listen again to try and keep up with dots, dashes and spaces.



This is what you should have got:

– – – – – · – · · · · · – · – · – – – – · · ·

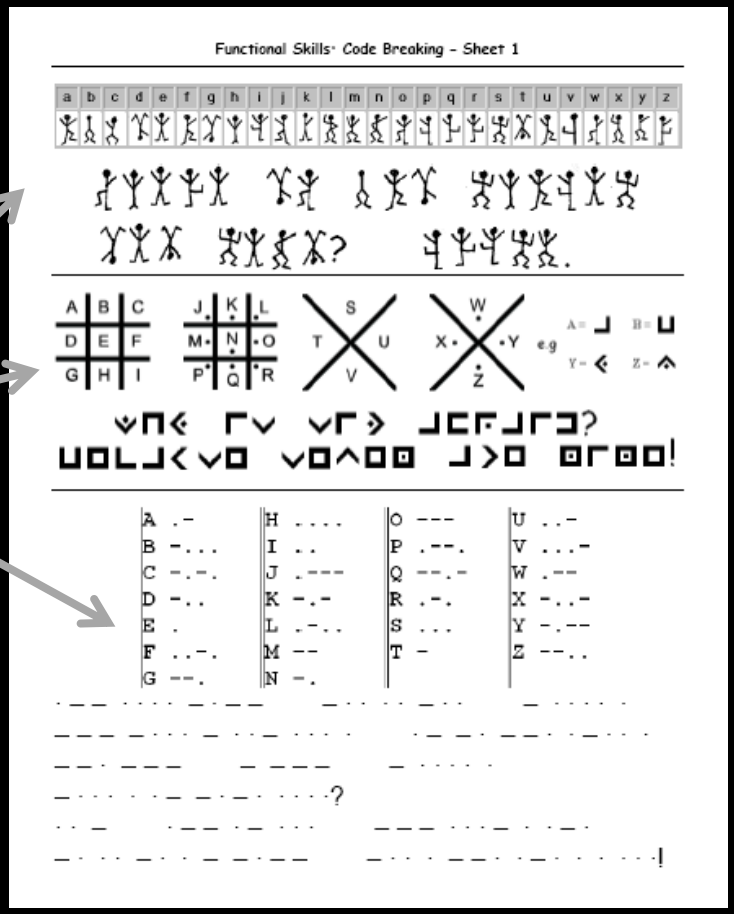
Listen to the sound again and see if you can follow along.



Task 1 – On Your Own

You are going to be give a sheet with these codes on to decipher for yourself.

By each piece of coding the cipher key is also included.



Another way to make a cipher code is to mix up the letters instead of using symbols.

For example suppose I change the letters around so…

E become L
H becomes X
L becomes P
O becomes E

…then the word HELLO becomes…

XLPPE

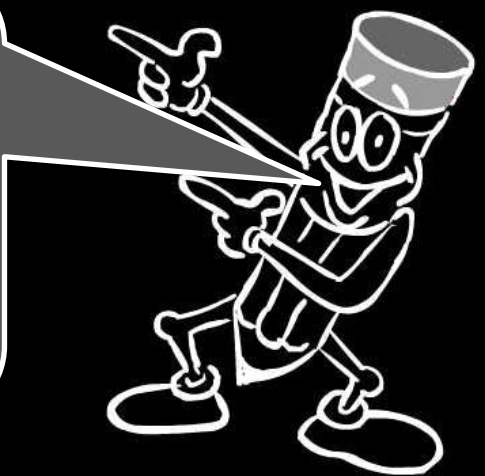
The reason why this is a good way to make a code is that there are lots of ways of mixing up the alphabet.

How many ways do you think we could mix up all the letters?

Over 400, 000, 000, 000, 000, 000, 000, 000, 000!

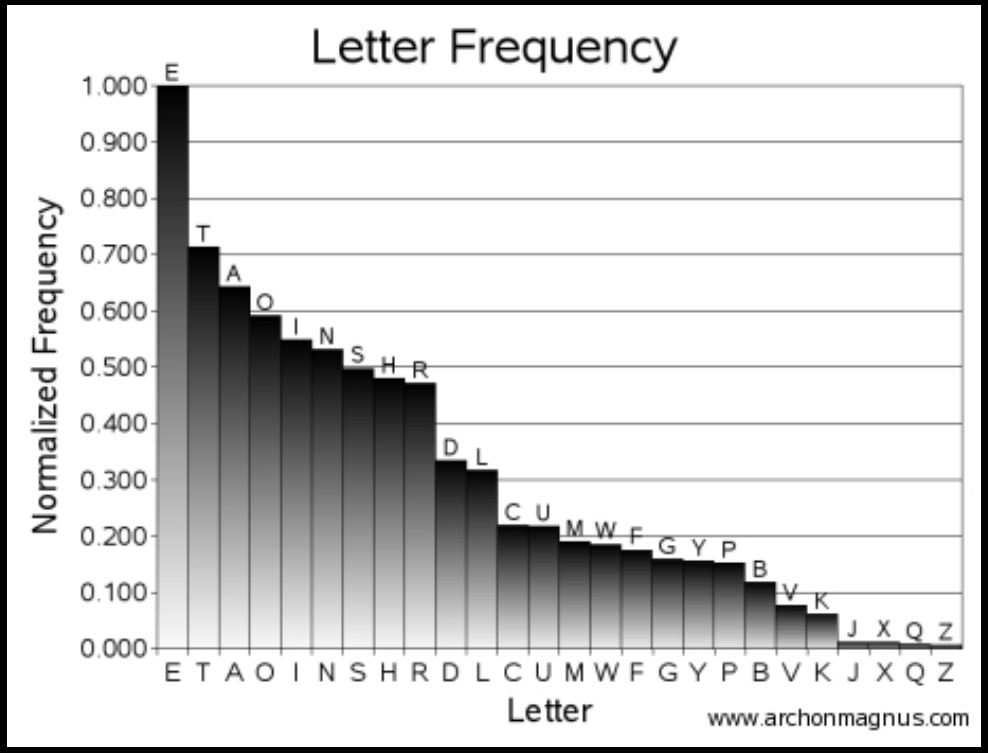
To say that number out loud it is:
Four Hundred Septillion

Interesting fact: If you read that number in Britain before 1974 the correct way to say it would have been four hundred quadrillion. In European countries you would still use the old way, but since 1974 most English speaking countries now use what is called the short system (which was previously referred to as the American System).



However!

Mathematicians can crack the code using something called *frequency analysis*.



What does this graph show us?

How could we use this to work out what a coded message says?

Task 2

You have a choice of tasks to finish you off:

1. Make an A3 poster of the codes we have been looking at explaining how they work.

2. Try to crack a harder code sheet that is made up of a combination of mixing up letters and symbols.

3. Write a short passage and create it in code. (This could be using symbols, mixing letters, or a combination of the two).