

Timed question:

**I VISUALIZE A TIME WHEN WE WILL BE TO ROBOTS WHAT DOGS ARE TO HUMANS. AND I AM ROOTING FOR THE MACHINES.**

1)

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

Here's how we get the answer. Since we are given that

$$F(5) \rightarrow B(1)$$

$$E(4) \rightarrow C(2)$$

From this we know:

$$(a \times 5 + b) \bmod 26 = 1$$

$$(a \times 4 + b) \bmod 26 = 2$$

Looking at the formulas we see that it is easiest to subtract the second from the first.

$$\begin{array}{r} (a \times 5 + b) \bmod 26 = 1 \\ -(a \times 4 + b) \bmod 26 = 2 \\ \hline a \bmod 26 = -1 \\ a \bmod 26 = 25 \end{array}$$

Now that we know that  $a = 25$

Popping that back into any of the formulas (we pick the second one because it is the lowest multiplier)

$$(25 \times 4 + b) \bmod 26 = 2$$

$$(100 + b) \bmod 26 = 2$$

We can then subtract 100 from both sides

$$\begin{array}{l} (100 + b) \bmod 26 - 100 = (2 - 100) \bmod 26 \\ b \bmod 26 = -98 \bmod 26 \\ b \bmod 26 = 6 \bmod 26 \end{array}$$

And we see that  $b = 6$ . However, we only know a few of the letters in the cipher:

O	C	C	W	S	M	N	N	Z	C	Z	Y	D	D	C	T	N	P	C	G	O	M	P	C	O	S	B	V	Y	B	C
	E	E						E					E				E					E			F			F	E	

Our first step is to encode the common letters **ETAOIN** to see what they would map to. Note that we already know the mapping for E so we don't have to do that one.

$$E(4) \rightarrow 4 \times 25 + 6 = 106 \rightarrow C(2)$$

$$T(19) \rightarrow 19 \times 25 + 6 = 481 \rightarrow N(13)$$

$$A(0) \rightarrow 0 \times 25 + 6 = 6 \rightarrow G(6)$$

$$O(14) \rightarrow 14 \times 25 + 6 = 356 \rightarrow S(18)$$

$$I(8) \rightarrow 8 \times 25 + 6 = 206 \rightarrow Y(24)$$

$$N(13) \rightarrow 13 \times 25 + 6 = 331 \rightarrow T(19)$$

Filling in the letters we found (CNGSYT) we get a bit more of the answer

O	C	C	W	S	M	N	N	Z	C	Z	Y	D	D	C	T	N	P	C	G	O	M	P	C	O	S	B	V	Y	B	C
	E	E	O		T	T		E		I				E	N	T		E	A				E		O	F		I	F	E

This doesn't give us enough to solve it quickly do we just take the next 5 letters **SRHLD**.

- S(18) → 18 × 25 + 6 456 → O(14)
- R(17) → 17 × 25 + 6 431 → P(15)
- H(7) → 7 × 25 + 6 181 → Z(25)
- L(11) → 11 × 25 + 6 281 → V(21)
- D(3) → 3 × 25 + 6 81 → D(3)

We know the reverse mapping of 5 more letters (OPZVD) which we can fill in

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

This leaves us with two letters that we don't know the mapping for, but a quick read tells us the two **M**s correspond to a **U** and the **W** must be the letter **K**. Doing the quick math confirms it

- K(10) → 10 × 25 + 6 256 → W(22)
- U(20) → 20 × 25 + 6 506 → M(12)

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

2) When something is important enough, you do it even if the odds are not in your favor.

**EURZB KYRLU JZTJB JYHKI LNZLR ZKCTU MKCQK JLRDR**  
**WHENS OMETH INGIS IMPOR TANTE NOUGH YOUDO ITEVE**  
**ZJSLU RKQQB NIRZK LJZMK CISND KI**  
**NIFTH EODDS ARENO TINYO URFV OR**

	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
Frequency		3	3	2	1			1	4	6	9	6	2	3			3	7	2	2	4				2	7
Replacement	Q	S	U	V	W	X	Z	P	R	I	O	T	Y	A	B	C	D	E	F	G	H	J	K	L	M	N

3) Perseverance is not a long race; it is many short races one after the other.

What you are looking for is the quotes above the characters. If you count the number of characters with quotes you find that 97 of them have quotes over them while 203 don't have quotes. One quick way to do this without counting is to add one when you see a character without a quote and subtract when you see a character with a quote as you go through the text. You quickly see that the number is largely positive which means that the non-quotes must correspond to the A symbol. The next step is to write an A below everyone without a quote and a B for the quoted characters and break into groups of 5 to decode..

**sée ýou rácińg see ýou rácińg sée yóu rácińg**  
**ABB BAA ABAABA AAA BAA ABAABA ABA ABB AABAAB**  
**ABBBA AABAA BAAAA BAAAB AABAA BAABB AABAA**  
**P E R S E V E**  
**see you racing see you racing sée yóu rácińg**

AAA AAA AAAABB AAA AAB AAABAA ABA AAB AAABAB  
BAAAA AAAAAABBAA AAABA AABAA ABAAA BAAAB

R A N C E I S

see you racing see you racing see you racing

BAA ABB ABBAAB AAA AAA ABABAA BBA BAB BAAAAB  
ABBA ABBA ABBA AAAA ABABAABBAB ABBA

N O T A L O N

see you racing see you racing see you racing

BAB AAA AAAAA AAA BAA ABAAAB AAA BAA BAABAA  
AABBABAAA AAAAA AAABA AABAA ABAAA BAABA ABAAA

G R A C E I T I

see you racing see you racing see you racing

ABA AAB ABABBA AAA AAB BAABAB BAB AAA BAABBB  
BAAAB ABABBAAAA ABBA BABBA BAAAB AABBB

S M A N Y S H

see you racing see you racing see you racing

ABB ABB AAAABA ABA BAA AAAAA AAA ABA AABAAB  
ABBAB BAAAA BAABA BAAAA AAAAA AAABA AABAA

O R T R A C E

see you racing see you racing see you racing

AAA BAB BABABB AAA ABA AAAAA AAB ABB AABAAA  
BAAAB ABBAB ABBA AABAA AAAAA AABAB BAABA

S O N E A F T

see you racing see you racing see you racing

BAA BAA AABAAB AAA BBB AABAAA BBA BBA ABAAAB  
AABAA BAAAA BAABA AABBB AABAAABBAB BAABA AABBB

E R T H E O T H

see you racing

BBA ABA ABAAAA

AABAA BAAAA

E R

W	O	R	K
W	H	A	T
S	V	R	D

W	O	R
Y	O	U
U	C	L

K	W
D	O
N	K

O	R	K	W	O
T	O	D	A	Y
H	F	N	W	M

R	K	W
C	A	N
T	K	J

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

4) .. every failure is a step to success

The pattern is that A=A, B=B, C=A, D=B, E=A, F=B repeating on

Alphabet	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
Baconian	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B

You can figure this out by looking at the mapping for the first four words

Alphabet	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
Baconian	A	B			A			B	A			B	A		A			B	A	B	A	B				

Looking at the string of RSTUV you see BABAB combined with the HI and LM each mapping to a BA, if you just fill in the rest you see it matches a pattern of ABAB...

MARIA BUILT MOVIE HOUSE BADLY.

AABAA BAABB AABAA BAAAA BABBA

E V E R Y

SUPER QUICK CLOCK WRONG.

AABAB AAAAA ABAAA ABABA

F A I L

BOARD LOOSE SINCE CHASE BEGUN

BAABB BAAAA AABAA ABAAA BAAAB

U R E I S

MUSIC BUYER BEING MOVIE EXTRA.

AAAAA BAAAB BAABA AABAA ABBBA

A S T E P

HEAVY URBAN TOWER BUILT WORSE SINCE MARIA BEGAN VISIT.

BAABA ABBAB BAAAB BAABB AAABA AAABA AABAA BAAAB BAAAB

T O S U C C E S S

5)

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

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

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

It is important to remember to ignore spaces and punctuation on both the text to be encoded and the encoding key.

6) THE TRUE SIGN OF INTELLIGENCE IS NOT KNOWLEDGE BUT IMAGINATION.

KUNKB INOLT JYHLJ KNXXL TNJRN LOJYK WJYDX NSTNQ  
 THETR UESIG NOFIN TELLI GENGE ISNOT KNOWL EDGEB  
 IKLMP TLJPK LYJ.  
 UTIMA GINAT ION.

<u>K1</u>	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
Frequency		1		1				1	2	7	6	7	1	7	2	2	1	1	1	4	1		1	3	4	
Replacement	Q	R	V	W	X	Y	Z	F	U	N	T	I	M	E	S	A	B	C	D	G	H	J	K	L	O	P