

Timed question [100 Points]: Solve this Aristocrat which is a quote by Scott Adams. When you have solved it, raise your hand so that the time can be recorded and the solution checked.

RPCI CFZ IPZ BXXM IPCI JBN CFZ IPZ OKFMI LZUZFCIKBU  
 WHAT ARE THE ODDS THAT YOU ARE THE FIRST GENERATION

BO PNTCUM RPB RKEE NUXZFMICUX FZCEKIJ  
 OF HUMANS WHO WILL UNDERSTAND REALITY

	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		5	8		3	6			9	2	4	1	4	3	2	6		3		1	5			4		8
Replacement	J	O	A	Q	L	R	B	X	T	Y	I	G	S	U	F	H	C	W	V	M	N	K	P	D	Z	E

1) [120 Points] Solve this Aristocrat which is a quote from John W. Gardner and starts with **WE ARE**.

HP EKP FGXBYXCEWWR DEFPN HYBV E JPKYPJ GD LKPEB  
 WE ARE CONTINUALLY FACED WITH A SERIES OF GREAT

GSSGKBCXYBYPJ ZKYWWYEXBWR NYJLCYJPN EJ YXJGWCZWP  
 OPPORTUNITIES BRILLIANTLY DISGUISED AS INSOLUBLE

SKGZWPTJ  
 PROBLEMS

	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		6	4	2	7	2	6	2		8	6	2		3		10		2	3	1		1	8	5	10	3
Replacement	X	T	U	F	A	C	O	W	Q	S	R	G	Z	D	J	E	K	Y	P	M	V	H	L	N	I	B

2) [100 Points] William Arthur Ward once said this about what to look for. It has been encoded using the Vigenère cipher using a very common five letter word. You have been told that the 13<sup>th</sup> through the 20<sup>th</sup> letters in the code (**AMKHWSIJ**) actually is the word **DISCOVER**. What does the message decode to?

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

When we seek to discover the best in others, we somehow bring out the best in ourselves.

3) [75 Points] Using a key of **TURN** encode the string **JUXTAPOSING** using the Hill Cipher with a 26 character alphabet. e.g.

$$\begin{pmatrix} T & U \\ R & N \end{pmatrix} \equiv \begin{pmatrix} 19 & 20 \\ 17 & 13 \end{pmatrix}$$

**J U X T A P O S I N G Z**  
**Z X L O O N C E W T Q L**

4) [350 Points] Solve this Xenocrypt which is a translation of a quote by Frank Clark into Spanish.

**MGXG SP ATBXG MVLML XS VSLPYHLV LPEG EVLBXS, ZYB**  
**TODO EL MUNDO TRATA DE REALIZAR ALGO GRANDE, SIN**

**XLVZS KTSBML XS ÑTS PL WYXL ZS KGAUGBS XS KGZLZ**  
**DARSE CUENTA DE QUE LA VIDA SE COMPONE DE COSAS**

**USÑTSJLZ**  
**PEQUEÑAS**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ñ	O	P	Q	R	S	T	U	V	W	X	Y	Z
Frequency	2	5			2		7	1		1	3	12	4		2		4			13	4	2	5	1	8	3	6
Replacement	M	N	Y	J	G	W	O	Z	B	Ñ	C	A	T	K	Q	X	L	F	H	E	U	P	R	V	D	I	S

Translation: Everyone tries to accomplish something big, without realizing that life is made up of small things.

- 5) [120 Points] Solve this Aristocrat which is a quote by Albert Einstein which has the word **ART** in it once and **THE** three times.

LMJ QDXL NJPVLTOVB LMTEK ZJ YPE JIAJSTJEYJ TX LMJ  
THE MOST BEAUTIFUL THING WE CAN EXPERIENCE IS THE

QCXLJSTDVX. TL TX LMJ XDVSYJ DO PBB LSVJ PSL PEH  
MYSTERIOUS. IT IS THE SOURCE OF ALL TRUE ART AND

XYTJEYJ  
SCIENCE

	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	3	1	4	5			1	1	14	1	10	4	1	2	5	2		5	8		5		7	5	1
Replacement	P	L	Y	O	N	Q	Z	D	X	E	G	T	H	B	F	A	M	V	R	I	J	U	K	S	C	W

- 6) [140 Points] A message from Stephen Hawking encrypted with the Affine Cipher using an alphabet of 26 characters has been received. You have been told that the 2<sup>nd</sup> and 3<sup>rd</sup> characters are the letters **HE**. With that knowledge, what does this message say?

Q	U	V	H	S	L	Y	V	I	Z	V	L	S	F	S	H	Q	Z	U	V	K	K
T	H	E	U	N	I	V	E	R	S	E	I	N	A	N	U	T	S	H	E	L	L

7) [350 Points] Solve this K1 Key encoded Patristocrat which is a quote by Isaac Asimov and starts with the word **FACTS**.

RLJAZ LMILS ILXWR QMNJU ZLOHA NVQIM NANZW OKFLZ  
 FACTS AREA H EAPOF BRICK SANDT IMBER ITISO NLYAS

BJJIZ ZRBKA SIWMF ASLAJ LOJWO CIMAA SISIL XNOAW  
 UCCES SFULT HEORY THATC ANCON VERTT HEHEA PINTO

LZALA IKFVL OZNWO  
 ASTAT ELYMA NSION

K1	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	11	2	1			3		1	9	6	3	12	5	6	7		2	3	5		1	2	6	2		8
Replacement	T	U	V	W	X	Y	Z	D	E	C	L	A	R	I	N	G	B	F	H	J	K	M	O	P	Q	S

8) [120 Points] The following quote from Ahmed Zewail has been encoded using a running key cipher against a famous document. What does it say?

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

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

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

9) [125 Points] Solve this Aristocrat which is a quote from Roy T. Bennett.

YPAANYY RY XIJ DIO DRVD ZIP DQSN ABRKMNU, MPJ DIO  
SUCCESS IS NOT HOW HIGH YOU HAVE CLIMBED, BUT HOW

ZIP KQEN Q HIYRJRSN URCCNGNXAN JI JDN OIGBU  
YOU MAKE A POSITIVE DIFFERENCE TO THE WORLD

	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	4	2	2	6	1		2	1	8	5	2		2	9	3	4	3	6	2		3	1		2	5	2
Replacement	C	L	F	H	K	X	R	P	O	T	M	J	B	E	W	U	A	I	V	Q	D	G	Z	N	S	Y

10) [50 Points] A quote from Ralph Waldo Emerson has been encoded using a Caesar Cipher. What does it say?

J	V	G	U	B	H	G	N	Z	O	V	G	V	B	A	B	A	R	F	G	N	E	G	F	A	B	G	U	V	A	T
W	I	T	H	O	U	T	A	M	B	I	T	I	O	N	O	N	E	S	T	A	R	T	S	N	O	T	H	I	N	G

J	V	G	U	B	H	G	J	B	E	X	B	A	R	S	V	A	V	F	U	R	F	A	B	G	U	V	A	T
W	I	T	H	O	U	T	W	O	R	K	O	N	E	F	I	N	I	S	H	E	S	N	O	T	H	I	N	G

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

L	B	H	U	N	I	R	G	B	J	V	A	V	G
Y	O	U	H	A	V	E	T	O	W	I	N	I	T

11) [100 Points] Encode the string **THE GODS TOO ARE FOND OF A JOKE** using the Affine Cipher with  $a=5$  and  $b=20$ .

T	H	E	G	O	D	S	T	O	O	A	R	E	F	O	N	D	O	F	A	J	O	K	E
L	D	O	Y	M	J	G	L	M	M	U	B	O	T	M	H	J	M	T	U	N	M	S	O

12) [125 Points] Using a key of **OUTSHINED** encode the string **ACCOMPLISHMENT** using the Hill Cipher with a 26-character alphabet. e.g.

$$\begin{pmatrix} O & U & T \\ S & H & I \\ N & E & D \end{pmatrix} \equiv \begin{pmatrix} 14 & 20 & 19 \\ 18 & 7 & 8 \\ 13 & 4 & 3 \end{pmatrix}$$

**A C C O M P L I S H M E N T Z**  
**A E O T O P G I V Y I V X V I**

13) [300 Points] Alexa severely misheard a phrase from Isaac Asimov in Epigraph in "*Isaac Asimov's Book of Science and Nature Quotations*" and then encoded it as an Aristocrat. What did it come out as?

**DSDIF WJMLU T GXVW EF ZIXH BZXOMZ AMCD MB WDIIT OADT**  
**EVERY THING A BOUT MY CROW SCOPIC LIFE IS TERRA PLEA**

**VOBDWWMLU. JXH ZTL WJMLUB BDH BETAA GDD BDH**  
**UPSETTING. HOW CAN THINGS SEW SMALL BEE SEW**

**MEOXIWTLW**  
**IMPORTANT**

	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	4	7	1	10	3	2	2	4	5	3		5	7		4				1	6	3	2	8	5		4
Replacement	L	S	F	E	M	Y	B	W	R	H	J	N	I	D	P	Z	X	Q	V	A	G	U	T	O	K	C







18) [60 Points] You know that a message has been encrypted using the Affine Cipher with an alphabet of 26 characters. You have discovered that the message **UDMMSV** decodes to say **PUZZLE**. What are the values of  $a$  and  $b$  in the function  $ax + b$  that were used to encode the message?

$$a = 7 \quad b = 19$$

19) [120 Points] The following strange headlines appeared in the newspaper but in reality, they are a Baconian encoded message from Henry Petroski where some letters encode as one character and the others as another in a pattern. You know that the message starts out as **AENGINE**. What does the message decode to?

Answer: As engineers, we were going to be in a position to change the world - not just study it.

As his loyal guest he was sorry if you spent today, my day, lying round.

AA AAA BAAAB AABAA AB BAA AABBA AB AAA ABBAA AABAA AA BAA BAAAA BAAAB

A S E N G I/J N E E R S

Enemy ocean worth zilch.

BABAA AABAA BABAA AABAA

W E W E

Do not guess badly.

BA AAA AABAA AABBA

R E G

He did claim he put amply known trend by the ocean beach.

AB BAB ABAAA AB BAA AABBA BAABA ABBAB AA AAB AABAA ABAAA

O I/J N G T O B E I/J

He was by its newly clear round glass.

AB BAA AA AAA ABBBA ABBAB BAAAB ABAAA

N A P O S I/J

Known: if you speak mercy, lucky trend on two super giant teeth.

BAABA AB AAA ABBAB ABBAA BAABA ABBAB AA ABA AABBB AAAAA ABBAA

T I/J O N T O C H A N

Happy! My day, know a baker in who empty bread with a brown shape he put.

AABBA AA BAA BAAB A AABBB AA BAA BABAA ABBAB BAAA A ABABA AAABB AB BAA

G E T H E W O R L D N

Below lucky album label whose quiet voice links panel

ABBAB BAABA ABAAA BAABB BAAAB BAABA BAAAB BAABA BAABB

O T J U/V S T S T U/V

In old lives bring quilt.

AA ABB BABBA ABAAA BAABA

D Y I/J T

The following tables might be useful during the event.

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

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
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

<b>AAAAA</b>	A
<b>AAAAB</b>	B
<b>AAABA</b>	C
<b>AAABB</b>	D
<b>AABAA</b>	E
<b>AABAB</b>	F
<b>AABBA</b>	G
<b>AABBB</b>	H
<b>ABAAA</b>	I/J
<b>ABAAB</b>	K
<b>ABABA</b>	L
<b>ABABB</b>	M

<b>ABBAA</b>	N
<b>ABBAB</b>	O
<b>ABBBA</b>	P
<b>ABBBB</b>	Q
<b>BAAAA</b>	R
<b>BAAAB</b>	S
<b>BAABA</b>	T
<b>BAABB</b>	U/V
<b>BABAA</b>	W
<b>BABAB</b>	X
<b>BABBA</b>	Y
<b>BABBB</b>	Z

## Frequency Table of English letters:

E	12.51%	S	6.54%	C	3.06%	G	1.96%	K	0.67%
T	9.25%	R	6.12%	U	2.71%	W	1.92%	X	0.19%
A	8.04%	H	5.49%	M	2.53%	Y	1.73%	J	0.16%
O	7.60%	L	4.14%	F	2.30%	B	1.54%	Q	0.11%
I	7.26%	D	3.99%	P	2.00%	V	0.99%	Z	0.09%
N	7.09%								

## Frequency Table of Spanish letters:

E	14.08%	I	5.98%	M	3.08%	Y	1.09%	Z	0.47%
A	12.16%	L	5.24%	P	2.89%	V	1.05%	Ñ	0.17%
O	9.20%	D	4.67%	B	1.49%	G	1.00%	X	0.14%
S	7.20%	T	4.60%	H	1.18%	F	0.69%	K	0.11%
N	6.83%	U	4.69%	Q	1.11%	J	0.52%	W	0.04%
R	6.41%	C	3.87%						

For the purposes of cryptograms it is customary to treat *n* and *ñ* as distinct letters, but *a* and *á* are the same letter. Likewise for *e* and *é*, and *i* and *í*. In other words, all the accent marks get amputated when working with cryptograms. Also, while some older Spanish dictionaries consider *ch*, *ll*, and *rr*, to be their own letters—this has fallen out of modern usage. Accordingly, “burro” is considered as five letters: “b-u-r-r-o” and not as four letters “b-u-rr-o.”

## Famous Phrases

### *Gettysburg address:*

FOUR SCORE AND SEVEN YEARS AGO OUR FATHERS BROUGHT FORTH ON THIS CONTINENT, A NEW NATION, CONCEIVED IN LIBERTY, AND DEDICATED TO THE PROPOSITION THAT ALL MEN ARE CREATED EQUAL.

### *Declaration of Independence:*

WHEN IN THE COURSE OF HUMAN EVENTS IT BECOMES NECESSARY FOR ONE PEOPLE TO DISSOLVE THE POLITICAL BANDS WHICH HAVE CONNECTED THEM WITH ANOTHER AND TO ASSUME AMONG THE POWERS OF THE EARTH, THE SEPARATE AND EQUAL STATION TO WHICH THE LAWS OF NATURE AND OF NATURE'S GOD ENTITLE THEM, A DECENT RESPECT TO THE OPINIONS OF MANKIND REQUIRES THAT THEY SHOULD DECLARE THE CAUSES WHICH IMPEL THEM TO THE SEPARATION.

### *Constitution of United States of America:*

WE THE PEOPLE OF THE UNITED STATES, IN ORDER TO FORM A MORE PERFECT UNION, ESTABLISH JUSTICE, INSURE DOMESTIC TRANQUILITY, PROVIDE FOR THE COMMON DEFENSE, PROMOTE THE GENERAL WELFARE, AND SECURE THE BLESSINGS OF LIBERTY TO OURSELVES AND OUR POSTERITY, DO ORDAIN AND ESTABLISH THIS CONSTITUTION FOR THE UNITED STATES OF AMERICA.

### *MAGNA CARTA (In Latin):*

JOHANNES DEI GRACIA REX ANGLIE, DOMINUS HIBERNIE, DUX NORMANNIE, AQUITANNIE ET COMES ANDEGAVIE, ARCHIEPISCOPI, EPISCOPI, ABBATIBUS, COMITIBUS, BARONIBUS, JUSTICIARIIS, FORESTARIIS, VICECOMITIBUS, PREPOSITIS, MINISTRIS ET OMNIBUS BALLIVIS ET FIDELIBUS SUIS SALUTEM.



1) [120 Points] Solve this Aristocrat which is a quote from John W. Gardner and starts with **WE ARE**.

**HP EKP FGXBYXCEWWR DEFPN HYBV E JPKYPJ GD LKPEB**

**GSSGKBCXYBYPJ ZKYWWYEXBWR NYJLCYJPN EJ YXJGWCZWP**

**SKGZWPTJ**

	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		6	4	2	7	2	6	2		8	6	2		3		10		2	3	1		1	8	5	10	3
Replacement																										

2) [100 Points] William Arthur Ward once said this about what to look for. It has been encoded using the Vigenère cipher using a very common five letter word. You have been told that the 13<sup>th</sup> through the 20<sup>th</sup> letters in the code (**AMKHSIJ**) actually is the word **DISCOVER**. What does the message decode to?

<b>B P B R O</b>	<b>J A B I C</b>	<b>Y W A M K</b>	<b>H W S I J</b>	<b>Y P B F W</b>

<b>X B F R G</b>	<b>Y P B V K</b>	<b>B M P S E</b>	<b>J P L A T</b>	<b>W Q K K G</b>

<b>Z B Q L W</b>	<b>G M P X A</b>	<b>S W R V K</b>	<b>J T S I K</b>







7) [350 Points] Solve this K1 Key encoded Patristocrat which is a quote by Isaac Asimov and starts with the word **FACTS**.

**RLJAZ LMILS ILXWR QMNJU ZLOHA NVQIM NANZW OKFLZ**

**BJJIZ ZRBKA SIWMF ASLAJ LOJWO CIMAA SISIL XNOAW**

**LZALA IKFVL OZNWO**

K1	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	11	2	1			3		1	9	6	3	12	5	6	7		2	3	5		1	2	6	2		8
Replacement																										

8) [120 Points] The following quote from Ahmed Zewail has been encoded using a running key cipher against a famous document. What does it say?

R	B	C	E	F	G	M	F	J	M	V	Y	T	I	G	V	C	V	I	A	U	P	G	E	Q	S	Q	O	Z	L

P	O	J	P	W	T	M	K	L	-	L	V	L	P	B	A	F	V	E	E	N	E	K	L	I	I

C	V	O	E	F	G	Q	R	K	B	P	H	T	I	X	U	G	X	V	K	.









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18) [60 Points] You know that a message has been encrypted using the Affine Cipher with an alphabet of 26 characters. You have discovered that the message **UDMMSV** decodes to say **PUZZLE**. What are the values of  $a$  and  $b$  in the function  $ax + b$  that were used to encode the message?

$$a = \boxed{\phantom{000}} \quad b = \boxed{\phantom{000}}$$

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19) [120 Points] The following strange headlines appeared in the newspaper but in reality, they are a Baconian encoded message from Henry Petroski where some letters encode as one character and the others as another in a pattern. You know that the message starts out as **AENGINE**. What does the message decode to?

Answer: \_\_\_\_\_

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**As his loyal guest he was sorry if you spent today, my day, lying round.**

**Enemy ocean worth zilch.**

**Do not guess badly.**

**He did claim he put amply known trend by the ocean beach.**

**He was by its newly clear round glass.**

**Known: if you speak mercy, lucky trend on two super giant teeth.**

**Happy! My day, know a baker in who empty bread with a brown shape he put.**

**Below lucky album label whose quiet voice links panel**

**In old lives bring quilt.**