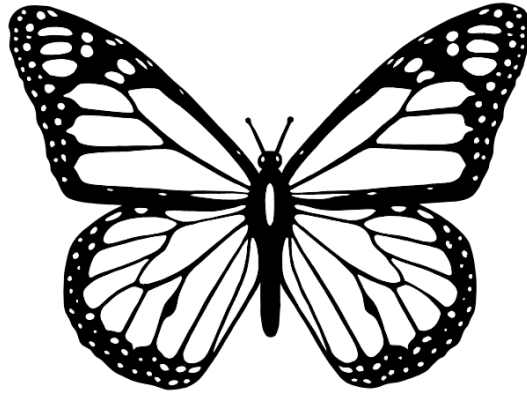


Codebusters



MESO 2023
27 May 2023

- You will have 40 minutes for this event
- Only writing utensils and your brain are allowed
- You may use the space on the exam as scratch paper, but please make sure that your answers are clear. Either write your answers separately and box them, or write them directly over/under the ciphertext.
- You may take apart the test as you wish; please staple the test back together **in order** as you hand it in at the end.
- The first question is the **timed question**. If you solve the timed question in the first 10 minutes within two errors, you will receive a timed bonus. Raise your hand if you are done with the timed question and Shreya, Jaina, or Isaac will come over to check your answer, and, if correct, record your time.
- If you do not solve the timed question within 10 minutes, you may still solve the question and receive points for it. You will just not receive any bonus points.
- Page 2 contains reference material. Page 3 is for scoring. **Do not write anything on the scoring page** besides your team number!
- If possible, please write your team number on each page (at the top).

Team Name: _____

Team Number: _____

Written By:

Shreya Nakum, Jaina Gandhi, and Isaac Jones

Resource Sheet



AAAAA	A	AABBA	G	ABBAA	N	BAABA	T
AAAAB	B	AABBB	H	ABBAB	O	BAABB	U/V
AAABA	C	ABAAA	I/J	ABBBA	P	BABAA	W
AAABB	D	ABAAB	K	ABBBB	Q	BABAB	X
AABAA	E	ABABA	L	BAAAA	R	BABBA	Y
AABAB	F	ABABB	M	BAAAB	S	BABBB	Z

Affine Letter	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
Number	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

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

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%				

Scoring Table

Exam Score

Question	Points	Score
1	214	
2	300	
3	182	
4	75	
5	100	
6	150	
7	250	
8	173	
9	102	
10	369	
11	420	
12	176	

Question	Points	Score
13	388	
14	366	
15	324	
16	108	
17	211	
18	140	
20	589	
21	214	
22	435	
23	401	
Total:	5690	

Timed Question

Question Score: Circle one: 250 0

Time: _____
minutes : seconds

Timed Bonus: $(600 - \text{time in seconds}) \times 2 = \text{time bonus}$

Total TQ Score: $\text{question score} + \text{timed bonus} = \text{total TQ score}$

Total

Final Score = $\text{Exam Score Total} + \text{TQ Total} + \text{Special Bonus} =$ _____

Rank: _____

Timed Question. [250 Points] Solve the following Caesar cipher. When you have solved it, yell "SWIFT" so the time can be recorded and solution checked.

TU SGZZKX CNGZ NGVVKTY OT ROLK, HK MUUJ ZU VKUVRK.

HKOTM MUUJ ZU VKUVRK OY G CUTJKXLAR RKMGE ZU RKGBK

HKNOTJ.

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

- 1) [214 Points] Solve the following Caesar cipher a friend of mine stated in a conversation during lunch:

E' Z NWP DAN AWP ODKA LKHEOD PDWJ IKPP'O BNQEP OJWYGO.

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

- 2) [300 Points] Solve the following Caesar cipher that uses the British spelling of words:

R XWLN BJF JW JNAXYUJWN FRCQ J LQNZDNANM URENAH. RC FJB

JW XMM BRPQC CX BNN.

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

- 3) [182 Points] Solve the following Caesar cipher that is a quote by Shreya Nakum:

HVS DIFDCGS CT AM ZWTS WG HC PS HVS ACGH ASBOQWBU

DSFGCB CB HVS DZOB SH.

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

- 4) [75 Points] Solve the following Caesar cipher that has a shift of +12:

U MY SAUZS FA EMZ RDMZOUEOA FTUE RDUPMK

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

5) [100 Points] Solve the following PigPen/Masonic cipher:

> Π Γ V L Γ 7 Π □ F L E E U V J L Γ □ □ .

6) [150 points] Solve this quote from a sad MHS student, encoded with the dancing man cipher:

⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ,

⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡ ⚡

7) [250 points] Solve this quote from a famous British singer, encoded with the Baconian cipher:

ABAAA ABABB AABBA ABBAB ABBAA ABBAA AAAAA ABBBA ABAAA

AAABA ABAAB BAABB ABBBA BAABA AABBB AABAA ABBBA ABAAA

AABAA AAABA AABAA BAAAB AAAAA ABBAA AAABB AAAAB BAABB

ABAAA ABABA AAABB AAAAA ABABA AABAA AABBA ABBAB AABBB

ABBAB BAABB BAAAB AABAA

- 8) [173 points] Solve this Caesar cipher which is a quote from everyone's favorite tormented teenager.

Q KIV' B MFXTIQV EPIB Q UMIV. IVL MDMV QN Q KWCTL, Q' U

VWB ACZM Q' L NMMT TQSM QB

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

- 9) [102 points] Decode this Atbash cipher written by a Disney Channel twin.

GSV DLIOW SZH VMWVW ZMW YVTFM ZTZRM NZMB GRNVH. HL DSB

MLG OVG RG, GZPV BLFI HSLVH LUU, HGZB Z DSROV.

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

12) [176 points] Solve the following Caesar cipher:

BXUEN CQN OXUUXFRWP LJNBJA LRYQNA FRCQ CQN BQROX WXC

PRENW CX HXD.

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

13) [388 points] Solve the following Caesar cipher:

SLKKVIWCZVJ WCLKKVI TVRJVCVJJCP RTIFJJ PFLI DZEU,

JNRGGZEX SFFBBVVGZEX WFI ZDRXZERKZFE.

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

14) [366 points] Solve the following Baconian cipher:







15) [324 points] Solve the following Caesar cipher:

BRX VKRXOG MXPSVFDUH WKHP ZLWK SHSSD SLJ FLSKHUV

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

16) [108 points] Solve the following Atbash cipher:

DSB WZMXV DSVM BLF XZM DZOP ZMW DROW LFG?

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

17) [211 points] Solve the following Dancing Man cipher:



18) [140 points] Solve the following PigPen/Masonic cipher:



19) [589 points] Encode the following Affine cipher with $a = 5$ and $b = 2$:

S	C	I	E	N	C	E	I	S	A	W	E	S	O	M	E

20) [214 points] Solve the following Baconian cipher:

ABAAAABAAABAABBBAAABBAABAABBAABAAAABAAAABAA

ABAAAABAAABAABBBAAABBAABAABBAABAAAABAAAABAA

AAABBABAAAAABBABAABBAAAAAAABBAAAAAAABAAAB

AAABBABAAAAABBABAABBAAAAAAABBAAAAAAABAAAB

22) [435 points] Solve the following Caesar cipher by a Remen:

N	B	Z	C	F
---	---	---	---	---

X	F
---	---

'

S	F
---	---

B	M	M
---	---	---

E	V	M	Z
---	---	---	---

-

U	S	B	J	O	F	E
---	---	---	---	---	---	---

F	H	H
---	---	---

-

D	S	B	E	M	J	O	H
---	---	---	---	---	---	---	---

T	M	F	F	Q
---	---	---	---	---

-

E	F	Q	S	J	W	F	E
---	---	---	---	---	---	---	---

T	D	J	F	O	D	F
---	---	---	---	---	---	---

P	M	Z	N	Q	J	B	O	T
---	---	---	---	---	---	---	---	---

™

J	O
---	---

U	I	F
---	---	---

H	S	B	O	E
---	---	---	---	---

T	D	I	F	N	F
---	---	---	---	---	---

P	G
---	---

U	I	J	O	H	T
---	---	---	---	---	---

23) [401 points] Solve the following Caesar cipher by a Bell Ciologist:

G	R	O	X
---	---	---	---

I	Y	E
---	---	---

C	V	O	O	Z
---	---	---	---	---

,

I	Y	E	B
---	---	---	---

O	I	O	C
---	---	---	---

K	B	O
---	---	---

X	Y	X	O	H	S	C	D	O	X	D
---	---	---	---	---	---	---	---	---	---	---