

Instructions (shown before students start the test)

Welcome to the 2020-2021 Science Olympiad Codebusters Workshop. The following is an abbreviated practice test for Division C Codebusters. In future workshops, practice tests be longer and closer to question types you can expect to find on the tournament exam. For now, this exam serves as an example for not just Codebuster participants but all student planning to attend events not currently offered in this initial workshop. Please use this opportunity to familiarize yourself with the processes of the virtual exam so as to be prepared your event on tournament day.

Introduction (shown after students start the test)

1. (200.00 pts) Solve this quote by Audrey Hepburn.

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

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

Z G I L C V L V I R Z K Z P Z D K D K O I : G L M M Z K I Q Q Z Q G I L J P G

L K V L Q G D C P T I T D C S ! Z H Z Q G Z ' V Z K X I K P I V Z P ,

E I O L A Q I Z P Z Q X I C S P C A I .

2. (100.00 pts) The following quote from John Milton needs to be decoded using the Affine Cipher where $a=15$ and $b=6$.

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

G Y G A O G B W Q O I B V O D I B O J O B D G P P T

3. (100.00 pts) Decrypt this quote from Alec Baldwin which has been encoded using a Caesar cipher.

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

E S P C P H L D Y Z E S T Y R E Z M P L D S L X P O Z Q O Z T Y R U Z M D

D T X A W J E Z X L V P L W T G T Y R , W Z Y R L D E S Z D P U Z M D

Q F P W P O Z E S P C N C P L E T G P P Q Q Z C E D

4. (120.00 pts) The following quote by Nikola Tesla has been encoded with the Vigenère Cipher using a keyword of CHARGE. What does it say?

BLOCK SIZE: 5

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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

5. (120.00 pts) A quote by Melinda Chapman has been encoded using the Morbit Cipher for you to decode. You are told that 8=xx, 5=●●, 9=x●, 4=●x, 2=●-, 6=-x

	●●	●-	●x	-●	--	-x	x●	x-	xx
Replacement	5	2	4	1	7	6	9	3	8

Hint Digits: 859426

5 8 5 5 9 6 5 2 9 8 2 8 5 4 5 5 3 7 3 2 4 1 6 5 3 4
 ●●xx●●●●x●-x●●●-x●xx●-xx●●●x●●●●x---x-●-●x-●-x●●x-●x

7 4 3 6 4 7 3 7 9 1 3 2 6 9 4 9 1 9 3 6 4 7 3 5 4
 --●xx--x●x--x---x-●x-●--xx●●xx●-●x●x--x●x--x-●●●x

4 2 4 9 9 5 6 4 2 4 1 7 3 9 5 4 5 3 4 7 4
 ●x●-●xx●x●●●-x●x●-●x-●--x-x●●●●x●●x-●x--●●x

6. (220.00 pts) Solve this quote from Douglas Adams which has been encoded as an Aristocrat using a K1 alphabet.

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

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

L	Z	H	N	F	R	N	X	M	I	D	O	J	N	H	K	L	F	H	L	M	J	F	H	J	Z	R	N	Z	F	K		
I	N	F	Q	G	N	Q	J	K	F	J	N	X	Z	R	R	N	Y	J	A	J	X	V	X	K	M	G	H	J	M	Z	R	J
J	C	V	X	J	Y	Y	L	K	F	,	"	N	Y	V	X	J	Z	Z	D	N	Y	N	F	N	L	X	V	K	X	Z	.	"

Thank you for taking part in this virtual workshop. If you are competing in Codebusters, please join me for a virtual presentation regarding this year's Codebuster's event.

