

Question #5 on [2018 Sample 7](#) is a Patristocrat with a [K1 alphabet](#) and a simple clue:

5) [250 Points] Solve this K1 key encoded Patristocrat which is a quote by Barbara Tuchman in “*Can History Be Served Up Hot?*” and has the word **THE** in it three times and ends with **HEARD**.

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD

OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX

OJFSV JKHOI NFHCD L

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement																										

Here’s one approach to solving it that focuses more heavily on the K1 key as a major clue.

- Since we are given that **FHCDL** corresponds to **HEARD**, we can go through and make that substitution globally as well as put it in our replacement below

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
HE RE R DED A E HER H A R D R
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
E D HE RE E H E R E A RE H H E
 OJFSV JKHOI NFHCD L
H E HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement			A	R		H		E				D														

- Next, we look for the locations of **THE** and see that **J** just correspond to **T** which is good because **J** also has a high frequency count. We fill that information in to get:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
THE RE R DED A T E T HERTH A R D R

OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 E DT HETRE E TH ER EA RE H H E
 OJFSV JKHOI NFHCD L
 TH TE HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement			A	R		H		E		T		D														

3. Looking at the key, we have quite a few clues. Because we have the **H** and **E** between the **R** and the **T**, we know that all of them are part of the key word. Along with that since the **A** is right before the **R**, we also know that it is part of the K1 key word. Looking at the unused letter for **A**, we could make a good guess that it is the letter **Z** which means that our keyword goes from at least **B** to **J** as **?AR?H?E?T** which we mark giving us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THE RE R DED A T E T HERTH A R D R
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 E DT HETRE E TH ER EA RE T H H E
 OJFSV JKHOI NFHCD L
 TH TE HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R		H		E		T		D														

4. Looking at the unused letter at **T** and counting backwards from **Z** we could make a good guess that **T** stands for **Q** which would mean that **TUVWXYZ** maps to **QSUVWXY** because **R** and **T** were already used. Filling this in gives us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEU RE R DED A ST S E T HERTH A UR D R
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 E DT HETRE E TH ER EVA REST WH H E W
 OJFSV JKHOI NFHCD L
 TH U T E HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R		H		E		T		D								Q	S	U	V	W	X	Y

5. Looking at the remaining letters between D and Q we see that there must be three gaps. Likewise we can also see that the 4th letter much come from the K slot. This gives us K could be either B or C, M must be one of FGIJ (H was already used), N is GIJK, etc. We mark the information down and then look to see if any of them make sense.

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEU RE R DED A ST S E T HERTH A UR D R
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 E DT HETRE E TH E R EVA REST WH H E W
 OJFSV JKHOI NFHCD L
 TH U T E HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z	A	R	H	E	T	^{bc}	D	^{fgij}	^{gkj}	^{ijkl}	^{klm}	^{klmn}	^{lmno}	^{mnp}	Q	S	U	V	W	X	Y				

6. Some obvious ones stand out. In particular, looking at the **N** right before **HEARD** at the end, we have choices of **GIJK**. Since we know of few words that end in either **I** or **J** we know it must be a **G** or a **K**. Looking back a bit more we see the **HRRX** which is **ElmnoImnoW** giving us choices of **ELLW** **EMMW** **ENNW** or **EOOW**. The only one of those which makes sense is **ELLW** which means **R** must be **L**. Filling these in gives us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEU RE R DED A ST S E T HERTH A UR LD R
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 E DT HETRE E TH E R EVAL REST WH H ELLW
 OJFSV JKHOI NFHCD L
 TH U T E ^{gk} HEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z	A	R	H	E	T	^{bc}	D	^{fgij}	^{gk}	^{ijkl}	J	K	L	^{mnp}	Q	S	U	V	W	X	Y				

7. Now that we filled in the **K** as a substitution for **Q** we know that **N** must be a **G** and **O** must be an **I** and **M** must be an **F**. Filling these in gives us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEU RE R DED A STIS E T HERTH A UR LDFR

OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 IE DT HETRE EI TH E RI EVALF REST WHI H FELLW
 OJFSV JKHOI NFHCD L
 ITH U T EI GHEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R		H		E		T	^{bc}	D	F	G	I	J	K	L	^{mnp}	Q	S	U	V	W	X	Y

8. Looking near the end of the second line we see **XFOEFMHRR** mapping to **WHI?HFELL** and could only be **WHICH FELL** meaning that **E** must be a **C** and this also tells us that **K** must be **B** (because that was the only letter left). Filling that in gives us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEU REC R DED A STIS E T HERTH A UR LDFR
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 IE DT HETRE EI TH E RI EVALF REST WHICH FELLW
 OJFSV JKHOI NFHCD L
 ITH U TBEI GHEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R	C	H		E		T	B	D	F	G	I	J	K	L	^{mnp}	Q	S	U	V	W	X	Y

9. At this point, there are only four letters which haven't been mapped: **M N O P**. Looking at the end of the phrase we see **KHOIN** mapping to **BEI?G** leading us to the conclusion that **I** must map to **N**. Filling that in gives us:

JFHVI DHESD LHLBC UJOUI SIHSJ FHDJF CISVD SRLMD
 THEUN REC R DED A STISN NE T HERTH AN UR LDFR
 OHILJ FHJDH HOIJF HBD OG HWCRM SDHUJ XFOEF MHRRX
 IENDT HETRE EINTH E RI EVALF REST WHICH FELLW
 OJFSV JKHOI NFHCD L
 ITH U TBEIN GHEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R	C	H		E	N	T	B	D	F	G	I	J	K	L	^{mop}	Q	S	U	V	W	X	Y

10. With only **M** and **P** left, we look at the start of the phrase and see **VIDHESDL** mapping to **UNREC?RD** with the only possible mapping for **S** being **O**. Filling that in gives us:

JFH|VI D HESD LHL|BC UJ|OUI SIH|SJ FHD|JF CI|SVD SRL|MD
THE|UN RECOR DED A ST|ISN ONE|OT HER|TH AN|OUR OLD|FR
 OHIL|J FH|JDH HOI|JF H|BDOG HWC|RM SDH|UJ XFO|EF MHRR|X
IEND|T HETRE E|INTH E RI EVAL|F OREST WHICH FELL|W
 OJFSV JKHOI NFHCD L
ITHOU T|BEIN GHEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z		A	R	C	H		E	N	T	B	D	F	G	I	J	K	L	O	Q	S	U	V	W	X	Y

11. There are only three letters left to fill in and we could just leave it this way to get 50 points off on the test, but it doesn't take much of a guess with only **M** and **P** left, we read **THE UNRECORDED ?AST** and quickly come to the conclusion that **B** must stand for **P** to read as **THE UNRECORDED PAST** which also means that **G** must be **M**. This works well as we see the K1 key word is **PARCHMENT**. We complete it with filling them in as:

JFH|VI D HESD LHL|BC UJ|OUI SIH|SJ FHD|JF CI|SVD SRL|MD
THE|UN RECOR DED PA ST|ISN ONE|OT HER|TH AN|OUR OLD|FR
 OHIL|J FH|JDH HOI|JF H|BDOG HWC|RM SDH|UJ XFO|EF MHRR|X
IEND|T HETRE E|INTH E PRIM EVAL|F OREST WHICH FELL|W
 OJFSV JKHOI NFHCD L
ITHOU T|BEIN GHEAR D

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		2	4	9	2	9	1	15	7	10	1	5	3	1	7			4	7		3	3	1	2		
Replacement	Z	P	A	R	C	H	M	E	N	T	B	D	F	G	I	J	K	L	O	Q	S	U	V	W	X	Y

The unrecorded past is none other than our old friend the tree in the primeval forest which fell without being heard.