

1.) List the five most common trigrams:

- a. Listing seven, as we have a few ties, here are our top five common trigrams:

```
Trigram Analysis:
1: ziz 10
2: goy 7
3: nkx 6
4: tnf 6
5: whk 5
6: dqg 5
7: big 4
```

2.) Show the difference between the starting indexes of the five most common trigrams:

- a. Same as before, listing seven – here are the occurrences:

```
>> Appearances for: ziz
// First Occurance: 367
// Spaces till Next Occurance 482
// Spaces till Next Occurance 80
// Spaces till Next Occurance 13
// Spaces till Next Occurance 187
// Spaces till Next Occurance 120
// Spaces till Next Occurance 130
// Spaces till Next Occurance 45
// Spaces till Next Occurance 45
// Spaces till Next Occurance 55

>> Appearances for: goy
// First Occurance: 77
// Spaces till Next Occurance 510
// Spaces till Next Occurance 27
// Spaces till Next Occurance 515
// Spaces till Next Occurance 95
// Spaces till Next Occurance 30
// Spaces till Next Occurance 85

>> Appearances for: nkx
// First Occurance: 16
// Spaces till Next Occurance 36
// Spaces till Next Occurance 25
// Spaces till Next Occurance 265
// Spaces till Next Occurance 910
// Spaces till Next Occurance 30

>> Appearances for: tnf
// First Occurance: 426
// Spaces till Next Occurance 591
// Spaces till Next Occurance 355
// Spaces till Next Occurance 45
// Spaces till Next Occurance 70
// Spaces till Next Occurance 20

>> Appearances for: whk
// First Occurance: 80
// Spaces till Next Occurance 200
// Spaces till Next Occurance 55
// Spaces till Next Occurance 400
// Spaces till Next Occurance 195
```

```
>> Appearances for: dqg
// First Occurance: 364
// Spaces till Next Occurance 559
// Spaces till Next Occurance 65
// Spaces till Next Occurance 600
// Spaces till Next Occurance 25

>> Appearances for: big
// First Occurance: 58
// Spaces till Next Occurance 93
// Spaces till Next Occurance 65
// Spaces till Next Occurance 340
```

3.) Based on our findings, what do you suspect the key length is?

- a. Based on what we could see from the differences from the indexes of the occurrence, I suspect the key length to be 5, either a word or some random characters.
- b. Specifically, if we look at some of the occurrences, while we progress through the occurrences, we begin to see multiples of 5 as seen above.

4.) Separate the ciphertext into X shift-by-N ciphers where X is the length of the key and perform monoalphabetic frequency analysis on each. What are the three most common ciphertext characters in each of the shift-by-N ciphers?

- a. For starters, when running my Python code – I allowed the user to pick which character 'i', they would like to shift (with 1 being the first character in the potential X, and X being the maximum character in that sequence a user can shift). This can be tested after the completion of the frequency analysis in the program.
- b. As seen here, we selected a key that is of length 5, here is our individual frequency analysis for each shift-by-N cipher (next page):

```

=====
>> What is your Key Length?
5
>> How many characters in the singular frequency analysis would you like to display?
3
=====
>> Here is your mono-alphabetic frequency analysis for the 1th character
#1: h 2.7%
#2: w 1.9%
#3: r 1.9%
=====
>> Here is your mono-alphabetic frequency analysis for the 2th character
#1: e 3.0%
#2: o 2.3%
#3: a 1.7%
=====
>> Here is your mono-alphabetic frequency analysis for the 3th character
#1: k 2.7%
#2: z 2.5%
#3: u 1.9%
=====
>> Here is your mono-alphabetic frequency analysis for the 4th character
#1: f 2.5%
#2: u 1.9%
#3: o 1.7%
=====
>> Here is your mono-alphabetic frequency analysis for the 5th character
#1: z 3.1%
#2: d 1.9%
#3: j 1.8%
=====

```

5.) Iterations until Key is found:

1st Attempt, we shifted every character by E.

```

>> Current Iteration:
wlvaxgkiureiexqocnickjcdvaispeyhgzyhtshmaizjofgpfqflemnlzpplnvpzsmfstqktyxjndmxtbfdeoudlkzygalscudjsbubvgboibtpomowocmtxumgptynhxi zpktjnxdtizzsjlcuhkckjewmpjfrtjqpqdhdtvsbnzfglsigllmetkbqgnzcxj
nwlvaxgkpejkrklfloiipnlryjjvkuqdhqmrcaoupyuffltltpjjbykoaimnviswbbirwcjxnpjycmuwtuetqylkvgnrqifvgdkauzcojrrakgteabkozcitcmivomankehquprdbgwpbkksogxiqafnhxbiqzimbguizjbgxpskckzxdhqwttvbgxgithqotanauvh
jhqjyaittseyefumhoapqagayngeuwejhjpsypwgkssbkizvytrplynckcirpgssbuoiecdjddhimatakotvyrfriftativghqaxedcxhlozdwamgvpenfyfqlkzbrutrheircuazwcyjjyflzvpkhozdriceijzirwddpdnzjlaxcfljddoikvqjmltbejmsak
yargpegwxbzjlksxgwiqhpmrerpwyatapazlttcqlrkjjgdwswimvdgsurqawohbtsasaonoxipxsawjwrztcvgdsniivfstsfaawvzxi cbdeawjbgizhubzfxgeuwejhjwyanenuntvdwrpcezwblxktskweiaghczjjcuqmdosmmlauggaxurmuvevjrnwjljvnrnc
hgcpbwowhphyoqksejoaahbijggjlalojysehfvmtyjvczlpnktagntgxtshupmrsvxpnrtgnxtheiadpkerinufsnxpcbtiterojnknduiduiboxzvmfmywiqvsfgyfcfjgtgpkczghdwrkxvjstldelxlolvpphkrigceftfvglqlqxewposswtohkvttybilzpoj
wymjxqcmepwrmvcomrhzjzqduxzudjpyuimpcmivengzlehqbktzjbuxsfnykstbwpxybhdiymtqhwhkgyxcmvpgmhgmwgcmebbzigirkecfjaubzlluctdvdcpnbjryfbsnzghggjgpasiltqwhdnzfgbyoipcvdveyjglxgpayotmhxeoiyynyhdukltzllqeln
yqkxsbpbhkozkakugiqhbszklsvrskybgvpvjblvdrictprbtbtnehqbvskyboreffjiwydcrcwtkfwxgmzwmv

>> Would you like to try another key? (Y/N)

```

2nd – 6th Attempt, since we do not know if the key is a word or a set of characters – we go with a safe route and since we know that the most common starting letters for the alphabet are t,a,o,d,w – we try all of them. We come to find that this doesn't really clarify much:

```

>> What do you suspect your key to be? (must be same length as key)
aeeee

>> Current Iteration:
wlvaxgkiureiexqocnickjcdvaispeyhgzyhtshmaizjofgpfqflemnlzpplnvpzsmfstqktyxjndmxtbfdeoudlkzygalscudjsbubvgboibtpomowocmtxumgptynhxi zpktjnxdtizzsjlcuhkckjewmpjfrtjqpqdhdtvsbnzfglsigllmetkbqgnzcxj
nwlvaxgkpejkrklfloiipnlryjjvkuqdhqmrcaoupyuffltltpjjbykoaimnviswbbirwcjxnpjycmuwtuetqylkvgnrqifvgdkauzcojrrakgteabkozcitcmivomankehquprdbgwpbkksogxiqafnhxbiqzimbguizjbgxpskckzxdhqwttvbgxgithqotanauvh
jhqjyaittseyefumhoapqagayngeuwejhjpsypwgkssbkizvytrplynckcirpgssbuoiecdjddhimatakotvyrfriftativghqaxedcxhlozdwamgvpenfyfqlkzbrutrheircuazwcyjjyflzvpkhozdriceijzirwddpdnzjlaxcfljddoikvqjmltbejmsak
yargpegwxbzjlksxgwiqhpmrerpwyatapazlttcqlrkjjgdwswimvdgsurqawohbtsasaonoxipxsawjwrztcvgdsniivfstsfaawvzxi cbdeawjbgizhubzfxgeuwejhjwyanenuntvdwrpcezwblxktskweiaghczjjcuqmdosmmlauggaxurmuvevjrnwjljvnrnc
hgcpbwowhphyoqksejoaahbijggjlalojysehfvmtyjvczlpnktagntgxtshupmrsvxpnrtgnxtheiadpkerinufsnxpcbtiterojnknduiduiboxzvmfmywiqvsfgyfcfjgtgpkczghdwrkxvjstldelxlolvpphkrigceftfvglqlqxewposswtohkvttybilzpoj
wymjxqcmepwrmvcomrhzjzqduxzudjpyuimpcmivengzlehqbktzjbuxsfnykstbwpxybhdiymtqhwhkgyxcmvpgmhgmwgcmebbzigirkecfjaubzlluctdvdcpnbjryfbsnzghggjgpasiltqwhdnzfgbyoipcvdveyjglxgpayotmhxeoiyynyhdukltzllqeln
yqkxsbpbhkozkakugiqhbszklsvrskybgvpvjblvdrictprbtbtnehqbvskyboreffjiwydcrcwtkfwxgmzwmv

>> Would you like to try another key? (Y/N)

```

7th – 14th attempt: with not much discernible words, we attempt (in order) the most frequent letters for the second frequency paired with our previously stated set of five letters that we started with for the first character (keep in mind, the rest of the letter sequence is still shifted by e).

```

>> Current Iteration:
wlvacxgiureioxqocnicjcdvaispeyhgzykshmaizjzfgpgfiqflemlnlzpplnvpsmfstqktyxjndmxtbfdeoudlkzgyalscudjsbubvgboibtpomowocmbxmggptynhxizpktnjndtizs3lculhckjcwmpjfrtjppqdhdtvswbnzfglsigllmetkbgznzj
nwiwqpkjejkflqoiipnlyjvkudqhmrcapuyufflttjbykoaimvniwbbirwcnxnpjymuwtuetqylkvgnriqfvgdkauzcojrrakgteabkozciitcmivomankehquprdbgpbkbsogxiqafnxbiqzimbzulzjbgxpkskzkodxqwtvbgxgitdhqotanauvh
jhqjyalttxeyfuhzoapqayngeuwejhjpsypwgkssbkizvytrplynckirpqsbsuoiecdhdmatakcotyvrifrtativghqaxedcxhlozdwangvpenfyfqlkzbrutheircuazwcyjyflzlvphxjdriemeijzrwdpddnzjlaxcfljddoikvqjmltbejmsak
yargpegwxbzjldksxwiiqhpmrerpwyitapazlttcprlkjgqdwswimvdsqurqawohbtsasaoxnoxipxawjwrztcvqdsniivfswawvgxi chdewjbgwizhubzfxgeuwejhjwyanenuntvdwrpcezbwlkktskweiaghczjjcuqmdosmmlauggaxumuevujwlljvnrnc
hgcpbwowhphyoqksejoaahbjggjlaiojysehfvmtjycvzlpnkgtgntgjxtshupmrsvxptngtneiadpkerinufsnxpcbtiterojnkndidui toczvmpfmyi qvsgfpycfjgtpgkzghdwrvknjstldelxolvpphkrigceftfvgkclaxewposawtohkvttvylzpoj
wymjxqcmppwrvmcomzjqdudxudjpyuimpcmvengzlehqktzjbxsfnykstbwpxybhdymtohwfwkgyxcmvpgmgpwgmebbzigirkecfjaubzlluctdvdcpnjryfbsnzghggjgpasiltqwhdnzfgbyoipcvdveyjglxgpayotmhxeiovyunyhdukiztlleln
yqkloksbphkzakuqihbszcklsrvskybgvpyjblvrdrictprtbtbnvehqbvskyborefjiwydcrcwtkfwgmrzwmv

>> Would you like to try another key? (Y/N)

```

As seen above, we have yet to find a key – now with a string of characters to choose from for both the first and second characters – we begin to pick the potential 3rd character by working our way down the list of appearances. Ideally, we luck out here – as this has essentially become a brute forcing of this cipher.

15th – 23rd attempt.

At this point, I realized, that I my math was a bit off in my tool. See, rather than subtracting the shift amount – and cycling through – I was adding it. Resulting in a never jumble of letters. I tried the experiment all over again. Beginning with everything shifted by E.

```

wnikdyjkfkkiyvyzopltjnuzzdfebfeevpfvjyevsdgozsskicaaelddwhlibahlfkqafqeniudlgurkpnjmwafmhafwsdgrehpgajswb3jnyerghauxgnokqznjqcggagjzmapzvbwptvganmudykavvdggyd
nvezrjgtfbacknhhnyvzogxfelgxtktdxedsbighyvmcvevzpgofesczckplkrwaqzyrybjkwaiunnyfckqreonoqvbgparfwkkj3pjbynovfcdikp3raaqjowebmualidp3jxevailmltkdyvbu2ccfer
pvevgkuqzkawpvnbnxecktpvzxwqzckuxpsdcqjowebtzjdbwvlnlidzckulwuvqafzsdprkeagazmcveetbjnyb3jveveftptbgdw3fepj3bthovxbdo3vers3cky3ooxudep3osapazmc3j3jvnrq3k3kus
dkp3k3dbf3ek3oj3sd3go3hop3lj3n3k3cm3kro3vi3q3f3td3j3k3r3sq3kr3y3q3k3w3ee3q3m3w3q3or3ct3dw3uv3se3v3y3z3co3ur3wt3b3yn3ov3f3cd3p3r3j3h3n3f3k3ry3q3k3ht3au3q3do3g3om3d3ov3e3v3a3u3q3f3ew3id3z3j3m3f3ec3w3p3z3so3gm3n3n3r3v3eh3p3ac3f3
lg3td3bw3it3n3kr3b3iz3pk3le3lw3k3v3u3at3z3fl3ac3dr3h3dr3k3vd3ap3fl3a3ux3ps3dg3j3fn3j3ep3bd3ql3dp3j3f3jo3qr3if3k3r3m3v3ev3xi3cv3nd3hx3j3s3j3v3t3ke3oy3k3ga3j3fx3ga3ud3n3q3p3rh3j3y3ps3dk3ok3k3b3s3v3aco3j3z3c3q3cx3p3j3r3sh3ck3h3y3ep3c
kpgihygm3cz3u3v3o3y3bt3g3k3p3v3sk3il3kp3j3b3n3k3pt3v3bd3ql3dp3q3d3fs3kev3l3k3q3nd3yl3fr3av3l3xp3pq3di3q3leh3j3ev3z3gz3r3c3ac3k3uc3k3ev3np3j3is3dk3or3j3q3sd3y3cr3j3dp3j3p3z3ng3br3rud3ka3e3l3r3ave3w3ot3by3zn3fy3b3w3p3v3
dc3q3x3m3wt3z3k3hub3ia3v3l3fq3ck3zy3ack3ul3ac3l3q3ave3a3u3q3fek3w3mat3dz3dock3urg3k3i3cx3gz3rt3og3y3p3eer3k3hg3k3de3ule3dp3j3k3v3ac3ov3en3iz3m3cv3l3r3by3gm3kn3j3gt3v3zn3gre3ven3iz3m3cv3l3gn3ov3m3f3ack3un3j3gt3vh3j3v3ec3p3qt3m
wp3ag3aq3y3d3nu3q3fn

>> Would you like to try another key? (Y/N)

```

Using the same strategy we employed earlier, we then move onto a combination for the first and second character in the sequence that potentially works.

```

>> Current Iteration:
wepvssafcnnteznetjdabbtzusbkgerbzrnetbmowivcgeqfagexzmedxecnetihghqjsobnnnknakushevdststyvnvonexcusbeuorqydrpxqespfaligdopiveorpgzcephenzvki3kibetclbr3qscfvm3cex3ec
alik3dch3k3f3og3y3z3nl3tn3sz3dnc3b3ef3it3f3v3m3ev3sh3eo3z3wi3ca3e3l3da3fl3ib3ef3l3ifo3af3q3li3ud3p3ek3ur3on3j3ma3n3af3m3f3y3f3w3sh3er3e3ta3js3at3bj3nc3r3gh3es3x3ns3iq3n3no3cg3ee3j3m3enz3v3ant3vg3el3mud3ci3av3he3yd
r3et3z3net3f3e3ak3nh3ly3v3z3ef3ex3p3ext3dor3x3ed3wt3bi3q3f3v3m3gt3ev3z3to3f3ew3ao3z3con3l3k3ray3q3yt3wb3j3g3ou3i3un3w3f3c3g3ore3o3rq3vb3te3ar3fa3ik3j3st3h3b3yn3st3f3cd3mi3p3re3oc3jo3ac3br3m3y3l3id3th3x3ev3gl3l3m3r3l3k3d3t3buz3ga3fer
t3tev3go3sq3z3keu3p3vn3l3f3ex3cor3pv3bu3z3cos3x3sha3q3o3ac3bt3z3bn3w3vp3l3l3id3ak3ul3as3q3v3ed3t3sh3or3kee3a3az3m3gte3v3e3ir3bj3f3w3c3iv3ite3f3tr3bg3at3f3ef3t3h3d3st3b3d3st3sm3ak3y3s3m3x3ud3in3bo3s3en3z3gh3f3v3ri3q3r3ou3kus
hip3k3ob3f3f3eo3u3j3sh3eo3v3h3n3l3s3i3c3m3p3ov3i3ud3ft3dn3k3r3io3kr3k3co3k3wi3c3q3m3ou3q3v3p3xt3das3v3s3it3py3z3a3our3ar3b3yn3st3f3cd3tor3j3z3ll3f3kr3c3ok3ht3es3q3ud3e3om3d3st3eva3sq3fe3al3id3zn3k3fec3an3z3s3om3gn3r3tre3ht3yc3f3q
p3ext3du3it3no3pb3iz3t3ile3ay3k3v3uer3z3f3le3adr3h3n3r3k3v3h3yp3f3les3x3ps3he3j3fn3w3ep3h3ol3j3d3th3j3z3or3i3fo3al3m3d3ev3x3m3av3nd3l3lx3j3w3h3v3tk3im3y3k3eg3f3x3es3q3dn3u3n3r3h3w3ep3hi3ok3xf3is3v3x3e3ao3j3g3oc3x3th3br3sl3akk3h3c3w3ep3c
o3ep3ih3cem3zy3t3bo3z3bt3go3op3vs3og3l3k3nth3b3dn3ont3v3h3ol3j3d3to3d3f3ote3v3lo3ok3nd3chl3f3ret3l3x3to3q3y3d3m3ole3hte3z3de3z3r3ce3ak3uc3ote3v3n3th3b3ish3ik3r3no3q3sd3car3j3d3th3b3z3re3b3ry3br3ka3e3cl3r3et3ev3ar3by3z3rd3y3v3aup3vs
ha3q3n3alt3k3l3sb3i3uet3l3fg3ak3zy3e3ak3le3ap3l3q3et3eva3sq3fe3ou3v3m3er3dz3ds3ak3ur3ki3ic3r3bez3t3se3q3yt3cer3k3l3ex3dis3led3th3d3k3ve3ao3v3il3iz3m3gt3l3r3bcm3kn3net3v3r3ze3v3il3iz3m3gt3l3gn3st3mf3e3ak3un3net3v3nt3b3ect3ot3m
an3aq3e3o3y3d3rs3q3fn

>> Would you like to try another key? (Y/N)

```

Using our intuition (this is probably around attempt 10 in the new go), we see a few words that could be formed by shifting the third character by 2.

```

>> Current Iteration:
whsvssdici3cnw3h3r3nh3w3j3da3et3zu3vek3geu3ez3r3nh3w3m3oz3lvc3ght3fa3ej3ame3ga3en3h3w3h3g3kt3j3so3e3nn3dn3ush3y3d3t3sw3b3v3o3q3ac3ue3e3out3y3d3pu3ox3q3v3s3fa3ol3gd3ol3ve3o3sz3ch3st3he3q3cv3ki3ne3et3co3er3q3s3f3im3v3ha3ec
ao3l3kd3kn3fo3j3y3z3o3pt3n3v3c3dn3f3ef3ei3w3f3v3zh3v3sh3r3z3sw3ll3ca3ef3od3da3io3be3io3f3ord3f3q3iol3ud3p3h3u3ro3q3m3a3q3d3f3ml3b3w3sh3h3ue3th3d3j3aw3ej3nc3f3ug3h3v3ag3ns3lt3zn3r3fg3q3h3m3z3m3eq3b3ag3v3ge3o3p3ud3cl3dv3h3t3y3d
r3w3h3r3nh3w3bed3n3h3b3v3z3h3af3ep3at3h3o3ad3e3w3e3io3i3y3zm3g3w3h3z3th3f3e3d3r3z3co3q3kr3ab3yt3z3e3j3o3l3un3r3z3f3c3k3g3re3o3rt3v3b3th3dr3fal3nj3t3ke3y3n3wi3cd3ml3s3r3er3f3jo3a3er3f3m3p3oid3t3ka3e3j3ol3m3p3ok3d3c3w3e3z3d3g3ier
t3w3h3v3o3gt3z3k3ox3s3v3n3fo3a3eo3c3ous3v3b3xt3z3co3v3ap3sh3t3jo3a3et3z3ee3w3p3o3id3d3n3l3av3t3v3eg3v3z3sh3r3k3e3hd3m3g3w3h3v3e3u3f3n3f3a3i3v3i3h3f3t3ue3gd3wi3e3f3t3k3e3d3h3s3w3b3d3s3w3h3s3m3d3n3yz3p3audi3ge3o3eq3d3m3g3ki3j3v3l3tr3o3px3us
h3s3k3oe3f3e3ox3r3j3sh3r3v3h3g3e3j3r3l3f3m3o3sr3v3i3u3g3t3dn3n3s3i3n3r3k3m3w3k3i3f3t3m3ox3v3q3s3at3d3av3y3s3w3z3d3r3u3a3ey3m3s3i3d3tr3uj3lo3i3k3r3n3ht3ev3t3d3h3s3w3h3v3a3e3t3f3e3ol3dn3i3e3aq3d3z3ss3r3p3n3r3v3a3h3et3b3f3q
ph3at3d3xl3n3o3ie3zt3lo3el3a3b3n3ue3u3c3f3led3r3h3e3uk3v3b3s3f3l3ev3ap3sh3m3f3n3z3h3b3h3ro3j3d3t3k3i3z3r3u3f3od3l3r3m3d3w3h3v3m3d3y3nd3lo3aj3j3w3y3t3k3ip3k3e3k3i3g3ev3d3nu3q3tr3h3z3h3p3l3r3k3f3l3v3x3ed3r3j3z3gr3f3ct3k3er3s3l3dk3h3c3k3w3ep3c
oh3sh3t3h3cp3zy3w3e3oz3z3et3go3rs3v3o3j3ok3nt3k3ed3no3q3v3b3h3ro3j3d3t3r3f3so3w3h3v3l3or3nd3k3of3r3ew3ox3n3t3ry3d3m3ro3eh3w3h3z3d3h3c3ed3nu3c3ow3h3nt3k3e3sh3l3n3x3n3r3ts3d3cu3j3d3t3k3ep3z3h3erry3e3u3ka3e3f3al3r3e3w3h3v3a3e3y3z3r3gb3v3ax3s3v3
h3d3t3na3ow3k3l3v3e3u3of3g3dn3y3ed3n3l3eds3l3q3e3h3v3a3et3f3e3ox3r3m3e3ug3z3ds3d3n3ur3kl3c3b3h3r3ts3ht3y3t3f3h3r3kl3h3x3d3i3vo3ed3t3k3ak3ved3rv3io3l3z3m3g3w3or3b3ch3p3k3n3h3w3z3r3h3ue3v3io3l3z3m3g3o3gn3s3w3f3med3n3u3n3h3w3h3w3e3ct3r3w3m
aq3d3g3ert3y3d3rv3t3fn

>> Would you like to try another key? (Y/N)

```

Following the same strategy, we move onto the fourth characters in this cipher:

```

>> Current Iteration:
wesetsailonthisnewseabecauseit'snewknowledgeandnewrightstobewonandtheymustbepoweredfortheprogressofallpeopleforspaceandscienceand
alltechnologyhasnoconscienceofitsownwhetheritwillbecomeaforceforgoodorilldependsonmanandonlyiftheunitedstatesoccupiesapositionofpreeminencecanwehelpdecidewhethe
rthisnewoceanwillbeaseaofpeaceoraterribletheaterofwaridonotsaythatweshouldorwillgounprotectedagainstthehostileuseofspaceanymorethanwegounprotectedagain
stthehostileuseoflandorseaanditdosaythatthespacecanbeexploredandmasteredwithoutfeedingthefiresofwarwithoutrepeatingthemistakesofmanmadeinextendinghiswritaroun
dhisglobeofearththereisnostrifeandnoconflictinouterspaceasyetitisahazardandahostiletoallitsconquestdeservesthebestofallmankindanditsopportunityfor
peacefulcooperationmaynevercomeagainbutwhysomesaythemoonwhychoosethisasagoalandtheymaywellaskwhyclimbthehighestmountainwhythirtyfiveyearsagoflytheatlanticwhyd
oesriceplaytexaswechoosetogotothemoonwechoosetogotothemoonwechoosetogotothemooninthisdecadeanddotheotherthingsnotbecausetheyareeasybutbecausetheyarehardbecaus
eathatgoalwillservetoorganizeandmeasurethebestofourenergiesandskillsbecauseathatchallengeisoneathatwewillingtonewareunwillingtopostponeandnewintendtowin
andtheotherstoo
>> Would you like to try another key? (Y/N)

```

And finally, we move onto the final character:

```

>> Current Iteration:
wesetsailonthisnewseabecauseit'snewknowledgeandnewrightstobewonandtheymustbepoweredfortheprogressofallpeopleforspaceandscienceand
alltechnologyhasnoconscienceofitsownwhetheritwillbecomeaforceforgoodorilldependsonmanandonlyiftheunitedstatesoccupiesapositionofpreeminencecanwehelpdecidewhethe
rthisnewoceanwillbeaseaofpeaceoraterribletheaterofwaridonotsaythatweshouldorwillgounprotectedagainstthehostileuseofspaceanymorethanwegounprotectedagain
stthehostileuseoflandorseaanditdosaythatthespacecanbeexploredandmasteredwithoutfeedingthefiresofwarwithoutrepeatingthemistakesofmanmadeinextendinghiswritaroun
dhisglobeofearththereisnostrifeandnoconflictinouterspaceasyetitisahazardandahostiletoallitsconquestdeservesthebestofallmankindanditsopportunityfor
peacefulcooperationmaynevercomeagainbutwhysomesaythemoonwhychoosethisasagoalandtheymaywellaskwhyclimbthehighestmountainwhythirtyfiveyearsagoflytheatlanticwhyd
oesriceplaytexaswechoosetogotothemoonwechoosetogotothemoonwechoosetogotothemooninthisdecadeanddotheotherthingsnotbecausetheyareeasybutbecausetheyarehardbecaus
eathatgoalwillservetoorganizeandmeasurethebestofourenergiesandskillsbecauseathatchallengeisoneathatwewillingtonewareunwillingtopostponeandnewintendtowin
andtheotherstoo
>> Would you like to try another key? (Y/N)

```

Finally, we find that our final key is "AGBVD," after around 20 attempts.

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>> Here is your final cipher:
wesetsailonthisnewseabecauseit'snewknowledgeandnewrightstobewonandtheymustbepoweredfortheprogressofallpeopleforspaceandscienceand
alltechnologyhasnoconscienceofitsownwhetheritwillbecomeaforceforgoodorilldependsonmanandonlyiftheunitedstatesoccupiesapositionofpreeminencecanwehelpdecidewhethe
rthisnewoceanwillbeaseaofpeaceoraterribletheaterofwaridonotsaythatweshouldorwillgounprotectedagainstthehostileuseofspaceanymorethanwegounprotectedagain
stthehostileuseoflandorseaanditdosaythatthespacecanbeexploredandmasteredwithoutfeedingthefiresofwarwithoutrepeatingthemistakesofmanmadeinextendinghiswritaroun
dhisglobeofearththereisnostrifeandnoconflictinouterspaceasyetitisahazardandahostiletoallitsconquestdeservesthebestofallmankindanditsopportunityfor
peacefulcooperationmaynevercomeagainbutwhysomesaythemoonwhychoosethisasagoalandtheymaywellaskwhyclimbthehighestmountainwhythirtyfiveyearsagoflytheatlanticwhyd
oesriceplaytexaswechoosetogotothemoonwechoosetogotothemoonwechoosetogotothemooninthisdecadeanddotheotherthingsnotbecausetheyareeasybutbecausetheyarehardbecaus
eathatgoalwillservetoorganizeandmeasurethebestofourenergiesandskillsbecauseathatchallengeisoneathatwewillingtonewareunwillingtopostponeandnewintendtowin
andtheotherstoo

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