```
alphabet0 = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";

frequency[txt_] := (FT = Array[Function[i, {Characters[alphabet0][[i]],
        Count[Characters[txt], Characters[alphabet0][[i]]]}], 26];
   FT = Transpose[FT];
   FT = Transpose[{FT[[2]] / N[Apply[Plus, FT[[2]]]], FT[[1]]}];
   Reverse[Sort[FT]]);

SubstCipher[key_, text_] := StringReplace[text,
   Table[StringTake[alphabet0, {i}] -> StringTake[key, {i}], {i, 1, 26}]];


CipherText =
   "KRJ NJZKQCY GZKJYYGFJZNJ CFJZNV DCO NQJCKJM GZ IGIKV IGBJ VJCQO CFT DGKR KRJ
     OGFZGZF TI KRJ ZCKGTZCY OJNUQGKV CNK AV HQJOGMJZK KQUPCZ KRJ ZCKGTZCY OJNUQGKV
     CNK NRCQFJM KRJ MGQJNKTQ TI NJZKQCY GZKJYYGFJZNJ DGKR NTTQMGZCKGZF ZCKGTZCY
     GZKJYYGFJZNJ CNKGBGKGJO CZM NTQQJYCKGZF JBCYUCKGZF CZM MGOOJPGZCKGZF
     GZKJYYGFJZNJ DRGNR CIIJNKO ZCKGTZCY OJNUQGKV KRJ NGC GO CZ GZMJHJZMJZK
     CFJZNV QJOHTZOGAYJ KT KRJ HQJOGMJZK CZM CNNTUZKCAYJ KT KRJ CPJQGNCZ
     HJTHYJ KRQTUFR KRJ GZKJYYGFJZNJ TBJQOGFRK NTPPGKKJJO TI KRJ UO NTZFQJOO";

frequency[CipherText]

{{0.136364, J}, {0.111364, K}, {0.102273, Z}, {0.102273, G}, {0.0818182, C},
 {0.0636364, N}, {0.0477273, Y}, {0.0477273, T}, {0.0477273, Q}, {0.0454545, O},
 {0.0409091, R}, {0.0409091, F}, {0.0272727, M}, {0.0181818, V}, {0.0181818, U},
 {0.0181818, I}, {0.0136364, H}, {0.0113636, P}, {0.00909091, D},
 {0.00909091, B}, {0.00681818, A}, {0, X}, {0, W}, {0, S}, {0, L}, {0, E}}
```

Guess from frequencies that J is e :

```
SubstCipher["ABCDEFGHIeKLMNOPQRSTUVWXYZ", CipherText]

KRe NeZKQCY GZKeYYGFeZNe CFeZNV DCO NQeCKeM GZ IGIKV IGBe VeCQO CFT DGKR KRe OGFZGZF
  TI KRe ZCKGTZCY OeNUQGKV CNK AV HQeOGMeZK KQUPCZ KRe ZCKGTZCY OeNUQGKV CNK
  NRCQFeM KRe MGQeNKTQ TI NeZKQCY GZKeYYGFeZNe DGKR NTTQMGZCKGZF ZCKGTZCY
  GZKeYYGFeZNe CNKGBGKGeO CZM NTQQeYCKGZF eBCYUCKGZF CZM MGOOePGZCKGZF
  GZKeYYGFeZNe DRGNR CIIeNKO ZCKGTZCY OeNUQGKV KRe NGC GO CZ GZMeHeZMeZK
  CFeZNV QeOHTZOGAYe KT KRe HQeOGMeZK CZM CNNTUZKCAYe KT KRe CPeQGNCZ
  HeTHYe KRQTUFR KRe GZKeYYGFeZNe TBeQOGFRK NTPPGKKeeO TI KRe UO NTZFQeOO
```

Now guess that K is t :

```
SubstCipher["ABCDEFGHIetLMNOPQRSTUVWXYZ", CipherText]

tRe NeZtQCY GZteYYGFeZNe CFeZNV DCO NQeCteM GZ IGItV IGBe VeCQO CFT DGtR tRe OGFZGZF
  TI tRe ZCtGTZCY OeNUQGtV CNt AV HQeOGMeZt tQUPCZ tRe ZCtGTZCY OeNUQGtV CNt
  NRCQFeM tRe MGQeNtTQ TI NeZtQCY GZteYYGFeZNe DGtR NTTQMGZCtGZF ZCtGTZCY
  GZteYYGFeZNe CNtGBGtGeO CZM NTQQeYCtGZF eBCYUCtGZF CZM MGOOePGZCtGZF
  GZteYYGFeZNe DRGNR CIIeNtO ZCtGTZCY OeNUQGtV tRe NGC GO CZ GZMeHeZMeZt
  CFeZNV QeOHTZOGAYe tT tRe HQeOGMeZt CZM CNNTUZtCAYe tT tRe CPeQGNCZ
  HeTHYe tRQTUFR tRe GZteYYGFeZNe TBeQOGFRt NTPPGtteeO TI tRe UO NTZFQeOO
```

The first word (tRe) suggests that R is h :

```
SubstCipher["ABCDEFGHIetLMNOPQhSTUVWXYZ", CipherText]

the NeZtQCY GZteYYGFeZNe CFeZNV DCO NQeCteM GZ IGItV IGBe VeCQO CFT DGth the OGFZGZF
  TI the ZCtGTZCY OeNUQGtV CNt AV HQeOGMeZt tQUPCZ the ZCtGTZCY OeNUQGtV CNt
  NhCQFeM the MGQeNtTQ TI NeZtQCY GZteYYGFeZNe DGth NTTQMGZCtGZF ZCtGTZCY
  GZteYYGFeZNe CNtGBGtGeO CZM NTQQeYCtGZF eBCYUCtGZF CZM MGOOePGZCtGZF
  GZteYYGFeZNe DhGNh CIIeNtO ZCtGTZCY OeNUQGtV the NGC GO CZ GZMeHeZMeZt
  CFeZNV QeOHTZOGAYe tT the HQeOGMeZt CZM CNNTUZtCAYe tT the CPeQGNCZ
  HeTHYe thQTUFh the GZteYYGFeZNe TBeQOGFht NTPPGtteeO TI the UO NTZFQeOO
```

The word tT suggests that T is o :

```
SubstCipher["ABCDEFGHIetLMNOPQhSoUVWXYZ", CipherText]
```

```
the NeZtQCY GZteYYGFeZNe CFeZNV DCO NQeCteM GZ IGItV IGBe VeCQO CFo DGth the OGFZGZF
  oI the ZCtGoZCY OeNUQGtV CNt AV HQeOGMeZt tQUPCZ the ZCtGoZCY OeNUQGtV CNt
  NhCQFeM the MGQeNtoQ oI NeZtQCY GZteYYGFeZNe DGth NooQMGZCtGZF ZCtGoZCY
  GZteYYGFeZNe CNtGBGtGeO CZM NoQQeYCtGZF eBCYUCtGZF CZM MGOOePGZCtGZF
  GZteYYGFeZNe DhGNh CIIeNtO ZCtGoZCY OeNUQGtV the NGC GO CZ GZMeHeZMeZt
  CFeZNV QeOHoZOGAYe to the HQeOGMeZt CZM CNNoUZtCAYe to the CPeQGNCZ
  HeoHYe thQoUFh the GZteYYGFeZNe oBeQOGFht NoPPGtteeO oI the UO NoZFQeOO
```

**The word oI suggests that I is f or n or r. I has low frequency and n and r are common,
so guess that I is f :**

```
SubstCipher["ABCDEFGHfetLMNOPQhSoUVWXYZ", CipherText]
```

```
the NeZtQCY GZteYYGFeZNe CFeZNV DCO NQeCteM GZ fGftV fGBe VeCQO CFo DGth the OGFZGZF
  of the ZCtGoZCY OeNUQGtV CNt AV HQeOGMeZt tQUPCZ the ZCtGoZCY OeNUQGtV CNt
  NhCQFeM the MGQeNtoQ of NeZtQCY GZteYYGFeZNe DGth NooQMGZCtGZF ZCtGoZCY
  GZteYYGFeZNe CNtGBGtGeO CZM NoQQeYCtGZF eBCYUCtGZF CZM MGOOePGZCtGZF
  GZteYYGFeZNe DhGNh CffeNtO ZCtGoZCY OeNUQGtV the NGC GO CZ GZMeHeZMeZt
  CFeZNV QeOHoZOGAYe to the HQeOGMeZt CZM CNNoUZtCAYe to the CPeQGNCZ
  HeoHYe thQoUFh the GZteYYGFeZNe oBeQOGFht NoPPGtteeO of the UO NoZFQeOO
```

**There are several 2 – letter words (GZ AV GO CZ) not involving e,
o, t, or f. This suggests G is i and C is a :**

```
SubstCipher["ABaDEFiHfetLMNOPQhSoUVWXYZ", CipherText]
```

```
the NeZtQaY iZteYYiFeZNe aFeZNV DaO NQeateM iZ fiftV fiBe VeaQO aFo Dith the OiFZiZF
  of the ZatioZaY OeNUQitV aNt AV HQeOiMeZt tQUPaZ the ZatioZaY OeNUQitV aNt
  NhaQFeM the MiQeNtoQ of NeZtQaY iZteYYiFeZNe Dith NooQMiZatiZF ZatioZaY
  iZteYYiFeZNe aNtiBitieO aZM NoQQeYatiZF eBaYUatiZF aZM MiOOePiZatiZF
  iZteYYiFeZNe DhiNh affeNtO ZatioZaY OeNUQitV the Nia iO aZ iZMeHeZMeZt
  aFeZNV QeOHoZOiAYe to the HQeOiMeZt aZM aNNoUZtaAYe to the aPeQiNaZ
  HeoHYe thQoUFh the iZteYYiFeZNe oBeQOiFht NoPPitteeO of the UO NoZFQeOO
```

**Now fiftV suggests V is y,
fiBe suggests B is v,
Dith suggests that D is w, ZatioZaY suggests that Z is n and Y is l,
and NoPPitteeO suggests N is c P is m and O is s :**

```
SubstCipher["AvawEFiHfetLMcsmQhSoUyWXln", CipherText]
```

```
the centQal intelliFence aFency was cQeateM in fifty five yeaQs aFo with the siFninF
  of the national secUQity act Ay HQesiMent tQUman the national secUQity act
  chaQFeM the MiQectoQ of centQal intelliFence with cooQMinatinF national
  intelliFence activities anM coQQelatinF evalUatinF anM MisseminatinF
  intelliFence which affects national secUQity the cia is an inMeHenMent
  aFency QesHonsiAle to the HQesiMent anM accoUntaAle to the ameQican
  HeoHle thQoUFh the intelliFence oveQsiFht committees of the Us conFQess
```

The rest is clear : Q is r, F is g, M is d, U is u, A is b, H is p :

```
SubstCipher["bvawEgipfetLdcsmrhSouyWXln", CipherText]
```

```
the central intelligence agency was created in fifty five years ago with the signing
  of the national security act by president truman the national security act
  charged the director of central intelligence with coordinating national
  intelligence activities and correlating evaluating and disseminating
  intelligence which affects national security the cia is an independent
  agency responsible to the president and accountable to the american
  people through the intelligence oversight committees of the us congress
```

**Note that the actual frequecies in this message do not
 come in the same order as the frequencies in "normal" English
 text. We had to use digrams ad short words to break the cipher.**