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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Frequency	8.0	1.5	3	4	12	2	2	5.5	7	0.1	0.7	4	2.5	7	8	2	0.1	6	6.5	9	3	1	2	0.2	2	0.1

(Frequencies don't add to 100 due to rounding errors)

MA341- Workshop III – Applications of Number Theory to Cryptography

Task 1. The encryption of the phrase "Appreciation of Number Theory" via shift cipher
is "laacp ntlet zyzqy fxmpc espzc j".
Decipher what was encrypted via the same cipher into
"tyotl yluzy pdlyo espvt yrozx zqesp ncjde lwdvf ww"

Task 2. Using the cipher C=7P+11(mod26), an old man encoded his will.
The ciphertext reads "PLRS AFCN ". Help his descendants figure it out.

Task 3. The following message is a ciphertext obtained by using an affine cipher:
```
XOFOU APHSR JWRAB EHHXA EQCWH XOPHX OSHXO BPSHP OCBOP SKUXH SMCGO
XOBFB OCHXO RABOH SEHCN OXAMS RRFKH EHAJJ VSEAP UCEKR RAIAO PHHXB
OCHHS OPEKB OEXOG OVHXO BOWOE SPXAM XOBXO CLEQC WOLHX AEQCW CPLHX
CHQCH IXAPU XAMSK HSRHX SEONO BHAIC JVKVA JEXOB RCPUE FCBOL
```

The two most frequent letters in the plaintext were E and T (but T might have been
seen more often)

A) Use this information to find out the multiplier m and the displacement d
in the code C=m*P+d(mod 26) used to encrypt the plain message.

B) Then, using the m and d you found, compute the decyphering code P=xC+y (mod 26).

C)Using this info, decypher the crypted text and recover the message

D) Send me your values m,d,x,y and the plain text message.

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	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Frequency	8.0	1.5	3	4	12	2	2	5.5	7	0.1	0.7	4	2.5	7	8	2	0.1	6	6.5	9	3	1	2	0.2	2	0.1

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EHWRI VSMYE IWSRE IEHEP UDELD ELEKE UPPSV SQEBY LSWTW DOSFS HKELL
YJYHP QBEOY QNSBQ QVLSC SRIDL WMENS TTYRP JEQYN EFYKW RVNYS LDSLQ
VFSOV WLUPE IESRQ VVNYY FSHIE HEOVS OYMBS LYPTA LSRIV NYJEV VHYLY
JYHQB SYQME REIYT PVWQV YEHQY OLYVB HERQV WVNYY MBSLY QPAHV SMEVY
KYEBW RVNYT YEVNQ VELER PELMW LYTQB EOYQV EVSWR KSVNY RWAIN PBWKY
LVWTY QVLWU ERYRV SLYBH ERYV

The two most frequent letters in the plaintext were E and A (but A might have been
seen more often)

A) Use this information to find out the multiplier m and the displacement d
in the code C=m*P+d(mod 26) used to encrypt the plain message.

B) Then, using the m and d you found, compute the decyphering code P=xC+y (mod 26).

C)Using this info, decypher the crypted text and recover the message

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VWJYW LRWVV WJYVN EVSQV NYGAY QVSWR PKNYV NYLVS QRWJH YLSRV NYMSR
TVWQA DDYLP VNYQH SRIQE RTELL WKQWD WAVLE IYWAQ DWLVA RYPWL VWVEC
YELMQ EIESR QVEQY EWDVL WAJHY QPERT JUWBB WQSRI YRTVN YM

The two most frequent letters in the plaintext were O and T (but T might have been
seen more often)

A) Use this information to find out the multiplier m and the displacement d
in the code C=m*P+d(mod 26) used to encrypt the plain message.

B) Then, using the m and d you found, compute the decyphering code P=xC+y (mod 26).

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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
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```
ELWJW VMEUR WVSRX ALYEN AMERJ YSRIW LVNLW AINSR EOVSW REHHW KENAM
ERJYS RIVWO WMYVW NELME LWJWV MAQVW JYUWL TYLQI SFYRV WSVJU NAMER
JYSRI QYPOY BVKNY LYQAO NWLTY LQKWA HTOWR DHSOV KSVNV NYDSL QVHEK
ELWJW VMAQV BLWVY OVSVQ WKRYP SQVYR OYEQH WRIEQ QAONB LWVYO VSWRT
WYQRW VOWRD HSOVK SVNVN YDSLQ VWLQY OWRTH EK
```

The two most frequent letters in the plaintext were O and T (but T might have been
seen more often)

A) Use this information to find out the multiplier m and the displacement d
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ELWJW VMAQV BLWVY OVSVQ WKRYP SQVYR OYEQH WRIEQ QAONB LWVYO VSWRT
WYQRW VOWRD HSOVK SVNVN YDSLQ VWLQY OWRTH EK

The two most frequent letters in the plaintext were O and T (but T might have been
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XOBFB OCHXO RABOH SEHCN OXAMS RRFKH EHAJJ VSEAP UCEKR RAIAO PHHXB
OCHHS OPEKB OEXOG OVHXO BOWOE SPXAM XOBXO CLEQC WOLHX AEQCW CPLHX
CHQCH IXAPU XAMSK HSRHX SEONO BHAIC JVKVA JEXOB RCPUE FCBOL
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The two most frequent letters in the plaintext were E and T (but T might have been
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BDKXK MCLCV YUDEM MQXKC LLBDC BOLSB BKXMS MOELV JCPVM DKMRQ YSPOC
MBCSX UCYBE DKCFK PJCPV UDKPM DKOKB MBDKX KMDKW PEUMS ZBDKM BEXKM
CXKGL EMKVJ USBDC UEXVM DKGCP OKBUD CBMDK GCAKZ EX

The two most frequent letters in the plaintext were E and S (but S might have been
seen more often)

A) Use this information to find out the multiplier m and the displacement d
in the code C=m*P+d(mod 26) used to encrypt the plain message.

B) Then, using the m and d you found, compute the decyphering code P=xC+y (mod 26).

C)Using this info, decypher the crypted text and recover the message

D) Send me your values m,d,x,y and the plain text message.