**HAVING FUN WITH CODES**

1. [Read about Cesar Ciphers](http://www.ti89.com/cryptotut/home.htm).

Visit the [Cryptography Tutorial](http://www.ti89.com/cryptotut/caesar4.htm) and decode the three strings shown.

Cut and paste the decoded answer and record the value of the shift key for each.

 1a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

 1b \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

 1c \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_

2. Take the encoded text below and perform character frequency analysis on it

using the [provided tool](http://www.ti89.com/cryptotut/frequencies.htm).

ZWLS XVWSO NRA XOTOR UONSX NBW WLS ZNEIOSX HSWLBIE ZWSEI WR EIPX VWREPRORE N ROF RNEPWR, VWRVOPTOA PR JPHOSEU, NRA AOAPVNEOA EW EIO DSWDWXPEPWR EINE NJJ QOR NSO VSONEOA OKLNJ. RWF FO NSO ORBNBOA PR N BSONE VPTPJ FNS, EOXEPRB FIOEIOS EINE RNEPWR, WS NRU RNEPWR XW VWRVOPTOA NRA XW AOAPVNEOA, VNR JWRB ORALSO. FO NSO QOE WR N BSONE HNEEJOZPOJA WZ EINE FNS. FO INTO VWQO EW AOAPVNEO N DWSEPWR WZ EINE ZPOJA, NX N ZPRNJ SOXEPRB DJNVO ZWS EIWXO FIW IOSO BNTO EIOPS JPTOX EINE EINE RNEPWR QPBIE JPTO. PE PX NJEWBOEIOS ZPEEPRB NRA DSWDOS EINE FO XIWLJA AW EIPX. HLE, PR N JNSBOS XORXO, FO VNRRWE AOAPVNEO, FO VNRRWE VWRXOVSNEO, FO VNRRWE INJJWF EIPX BSWLRA. EIO HSNTO QOR, JPTPRB NRA AONA, FIW XESLBBJOA IOSO, INTO VWRXOVSNEOA PE, ZNS NHWTO WLS DWWS DWFOS EW NAA WS AOESNVE. EIO FWSJA FPJJ JPEEJO RWEO, RWS JWRB SOQOQHOS FINE FO XNU IOSO, HLE PE VNR ROTOS ZWSBOE FINE EIOU APA IOSO. PE PX ZWS LX EIO JPTPRB, SNEIOS, EW HO AOAPVNEOA IOSO EW EIO LRZPRPXIOA FWSC FIPVI EIOU FIW ZWLBIE IOSO INTO EILX ZNS XW RWHJU NATNRVOA. PE PX SNEIOS ZWS LX EW HO IOSO AOAPVNEOA EW EIO BSONE ENXC SOQNPRPRB HOZWSO LX—EINE ZSWQ EIOXO IWRWSOA AONA FO ENCO PRVSONXOA AOTWEPWR EW EINE VNLXO ZWS FIPVI EIOU BNTO EIO JNXE ZLJJ QONXLSO WZ AOTWEPWR—EINE FO IOSO IPBIJU SOXWJTO EINE EIOXO AONA XINJJ RWE INTO APOA PR TNPR—EINE EIPX RNEPWR, LRAOS BWA, XINJJ INTO N ROF HPSEI WZ ZSOOAWQ—NRA EINE BWTOSRQORE WZ EIO DOWDJO, HU EIO DOWDJO, ZWS EIO DOWDJO, XINJJ RWE DOSPXI ZSWQ EIO ONSEI.

 2a.Take a screen snapshot and cut and paste the result to your report.

3. Next, take the encrypted text and change the replacement letters using [this tool](https://cryptii.com/pipes/alphabetical-substitution) and try to decode the text. Some of the characters will be wrong. You just have to experiment a little to find the right match.

Here are some hints:

Only the first two characters from the letter frequency analysis are correct. The others are close but not exact.

Experiment with specific letter substitutions to figure out the words. For instance:

* One letter words are likely: a or I
* Two letter words might be: if it of an or on in at as to
* Three letter words might include: the (the most common) for and can but not

If you get stuck, here are some more hints:

This is a partial decryption set showing 9 of the 6 characters of the alphabet.



Figure 1: A partial decryption set showing 9 of the 6 characters of the alphabet.

Once you have deciphered the text complete the following:

 3a. Cut and paste the decoded text to your report.

 3b. Cut and paste the resultant substitution matrix into your report as well.

4. For an extra challenge, try this text. It is trickier:

GHRX AOLMMLT, RES GCB XMLGCZ GNYBX SLS TZOB RES TLVAMB LE GCB HRAB: RMM VLVXZ HBOB GCB ANONTNYBX, RES GCB VNVB ORGCX NPGTORAB. ABHROB GCB URAABOHNJD, VZ XNE! GCB URHX GCRG ALGB, GCB JMRHX GCRG JRGJC! ABHROB GCB UPAUPA ALOS, RES XCPE GCB KOPVLNPX ARESBOXERGJC! CB GNND CLX YNOWRM XHNOS LE CRES: MNET GLVB GCB VREQNVB KNB CB XNPTCG XN OBXGBS CB AZ GCB GPVGPV GOBB, RES XGNNS RHCLMB LE GCNPTCG. RES, RX LE PKKLXC GCNPTCG CB XGNNS, GCB URAABOHNJD, HLGC BZBX NK KMRVB, JRVB HCLKKMLET GCONPTC GCB GPMTBZ HNNS RES APOAMBS RX LG JRVB! NEB, GHN! NEB, GHN! RES GCONPTC RES GCONPTC GCB YNOWRM AMRSB HBEG XELJDBO-XERJD CB MBKG LG SBRS, RES HLGC LGX CBRS CB HBEG TRMPVWCLET ARJD. RES, CRX GCNP XMRLE GCB URAABOHNJD? JNVB GN VZ ROVX, VZ ABRVLXC ANZ N KORAUNPX SRZ! JRMMNNC! JRMMRZ! CB JCNOGMBS LE CLX UNZ.

Use the same strategy as before to decode the words.

Hint…some words may not look right.

Here is a partial decode hint showing 10 characters.



Figure 2: A partial decode hint showing 10 characters.

 4a. Cut and paste the decoded text to your report.

 4b. Cut and paste the resultant substitution matrix into your report as well.

5. Write a one page summary of what you have done and what you think of these ciphers and tools.