This document contains supplementary material for the article "Cryptographic Word Search," by Tom Edgar and Andrew Lloyd (*Math Horizons,* November 2014, pp. 26–27).

The reader may wish to use the following Sage code to perform the encryption using the affine cipher (it is set so that $a = 3$ and $b = 20$):

```
(a,b)=(3,20)
Plaintext='ABCDEFGHIJKLMNOPQRSTUVWXYZ'
Ciphertext=join([chr((a*(ord(x)-65)+b).mod(26)+65) for x in
Plaintext],'')
print Plaintext
print Ciphertext
```

This code will produce:

```
ABCDEFGHIJKLMNOPQRSTUVWXYZ
UXADGJMPSVYBEHKNQTWZCFILOR
```

The code is available as an interactive Sagecell at this URL: http://bit.ly/1dguMyB.

<div style="border:1px solid black; padding:10px;">

<p style="text-align:center; color:red;">Warning!</p>

The following pages contain
Page 2: the numbers a and b that were used to encrypt the second word search puzzle;
Page 3: the solution to the first word search;
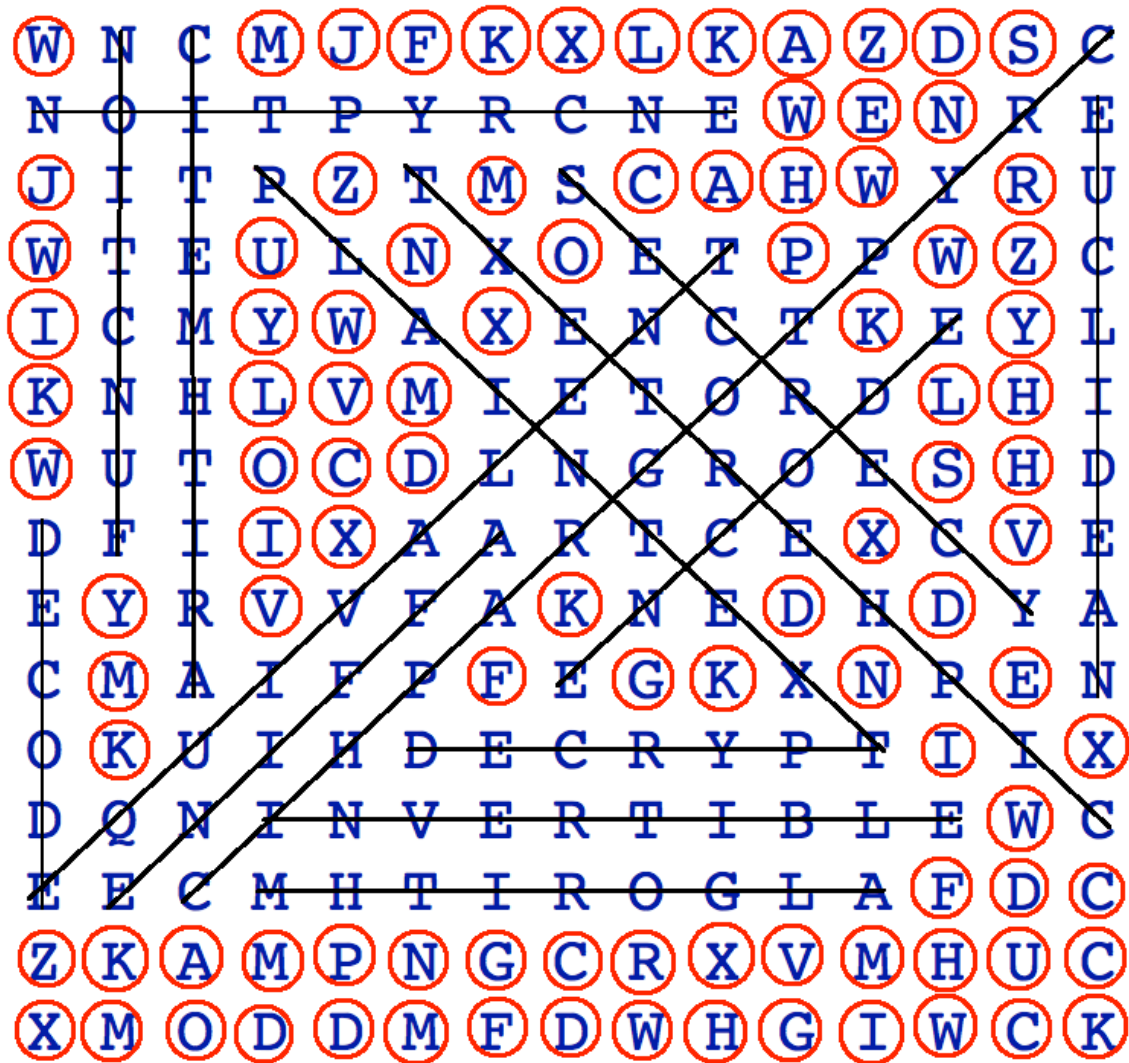Page 4: the decryption of the remaining letters, the second word search, and its solution.

</div>

The numbers used to encrypt the second word search are:
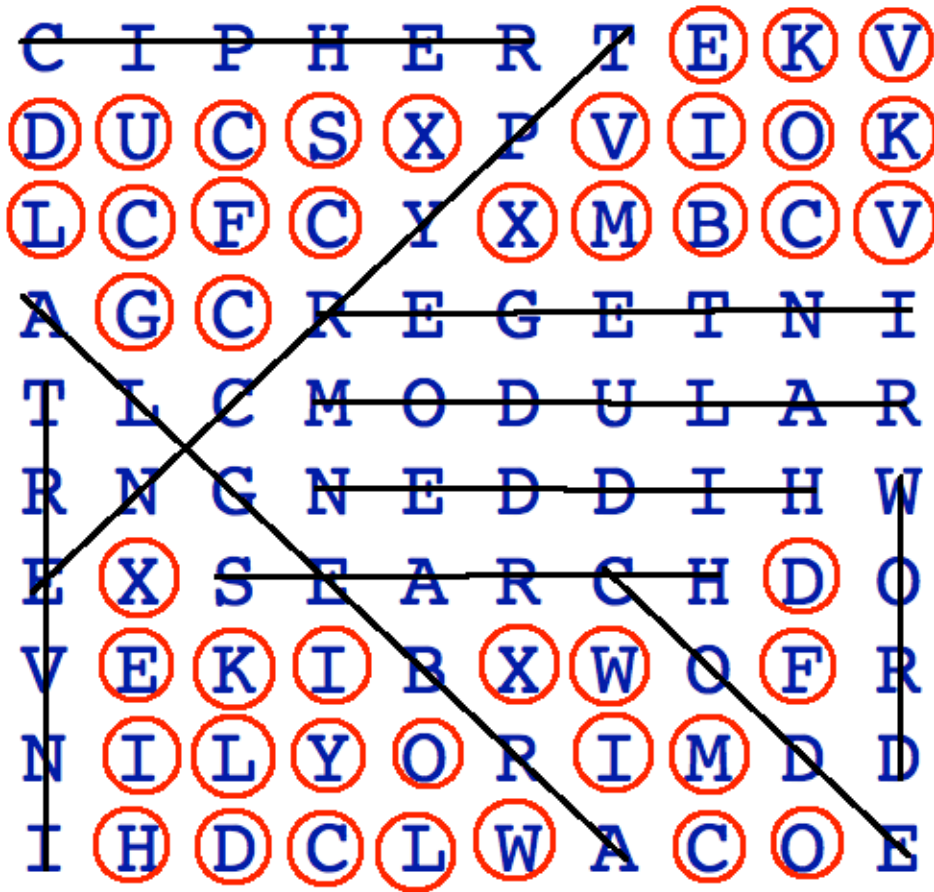
$a = 7$

$b = 8$.

Solution:

Remaining Letters:

WMJFKXLKAZDSWENJZMCAHWRWUNOPWZIYWXKYKLVMLHWOCDSHIX
XVYVKDDMFGKNEKIXWFDCZKAMPNGCRXVMHUCXMODDMFDWHGIWC
K

Decrypted:

CIPHERTEKVDUCSXPVIOKLCFCYXMBCVAGCREGETNITLCMODULARRNGNE
DDIHWEXSEARCHDOVEKIBXWOFRNILYORIMDDIHDCLWACOE

C I P H E R T E K V
D U C S X P V I O K
L C F C Y X M B C V
A G C R E G E T N I
T L C M O D U L A R
R N G N E D D I H W
E X S E A R C H D O
V E K I B X W O F R
N I L Y O R I M D D
I H D C L W A C O E

Remaining Letters:

EKVDUCSXVIOKLCFCXMBCVGCXDEKIXWFILYOIMHDCLWCO

Decrypted:

SENDYOURNAMETOHORIZONWORDSEARCHATGMAILDOTCOM