Ragbaby Cipher

**Step 1:** Alice and Bob agree on a keyword, say “treenut”, and remove duplicate letters leaving them with the reduced keyword “trenu”.

**Step 2:** The Alphabet Line is created by writing the reduced keyword followed by the remaining English letters in alphabetical order (J and X are usually removed. If they are needed J becomes I and X becomes W):

```
t r e n u a b c d f g h i k l m o p q s v w y z
```

**Step 3:** The plaintext message is written down keeping the word lengths intact. Under the first letter of the first word, write a “1” and continue numbering the letters in the first word sequentially. Under the first letter of the second word, write a “2” and continue numbering the letters in the second word sequentially. This process continues in the obvious way (first letter of third word is given a “3” …). For example:

```
 t h i s   i s   t h e   o n l y   e x a m p l e
 1 2 3 4   2 3   3 4 5   4 5 6 7   5 6 7 8 9 10 11
```

**Step 4:** To encipher the first “t”, locate “t” in your alphabet line and shift 1 letter to the right (since there is a 1 under the “t”) to become an “R”. The letter “h” is shifted two letters to the right from its place in the alphabet line to become a “K”. “i” is shifted 3 letters to become “M”. This process continues: each letter is shifted to the right a distance of $d$ where $d$ is the numeral below the letter. If you reach the end of the alphabet line, just wrap around to the beginning. For this example we have:

Plain: 
```
t h i s   i s   t h e   o n l y   e x a m p l e
 1 2 3 4   2 3   3 4 5   4 5 6 7   5 6 7 8 9 10 11
```

Cipher: 
```
R K M Z   L Y   N M C   V D V A   C N I Z E T K
```

**Step 5:** The ciphertext is now transmitted, keeping word lengths intact. Since Bob knows the keyword, he can easily re-create the alphabet line, write down the appropriate numerals under the ciphertext and start shifting to the left to decipher the message.