

Chapter 6 #17.

Since Alice is encoding her message letter by letter with an exponent of 13, the numbers will be small enough that we can just calculate the encrypted value of each letter of the alphabet. By raising each number 1-26 to the power of 13 (mod 8881), we obtain:

1 = 1
2 = 8192
3 = 4624
4 = 4028
5 = 794
6 = 2343
7 = 231
8 = 4461
9 = 4809
10 = 3556
11 = 476
12 = 2015
13 = 513
14 = 699
15 = 3603
16 = 8078
17 = 2825
18 = 8093
19 = 2547
20 = 1072
21 = 2424
22 = 633
23 = 413
24 = 5982
25 = 8766
26 = 1783

Thus, Alice's message of 4461 794 2015 2015 3603 decrypts as "hello".