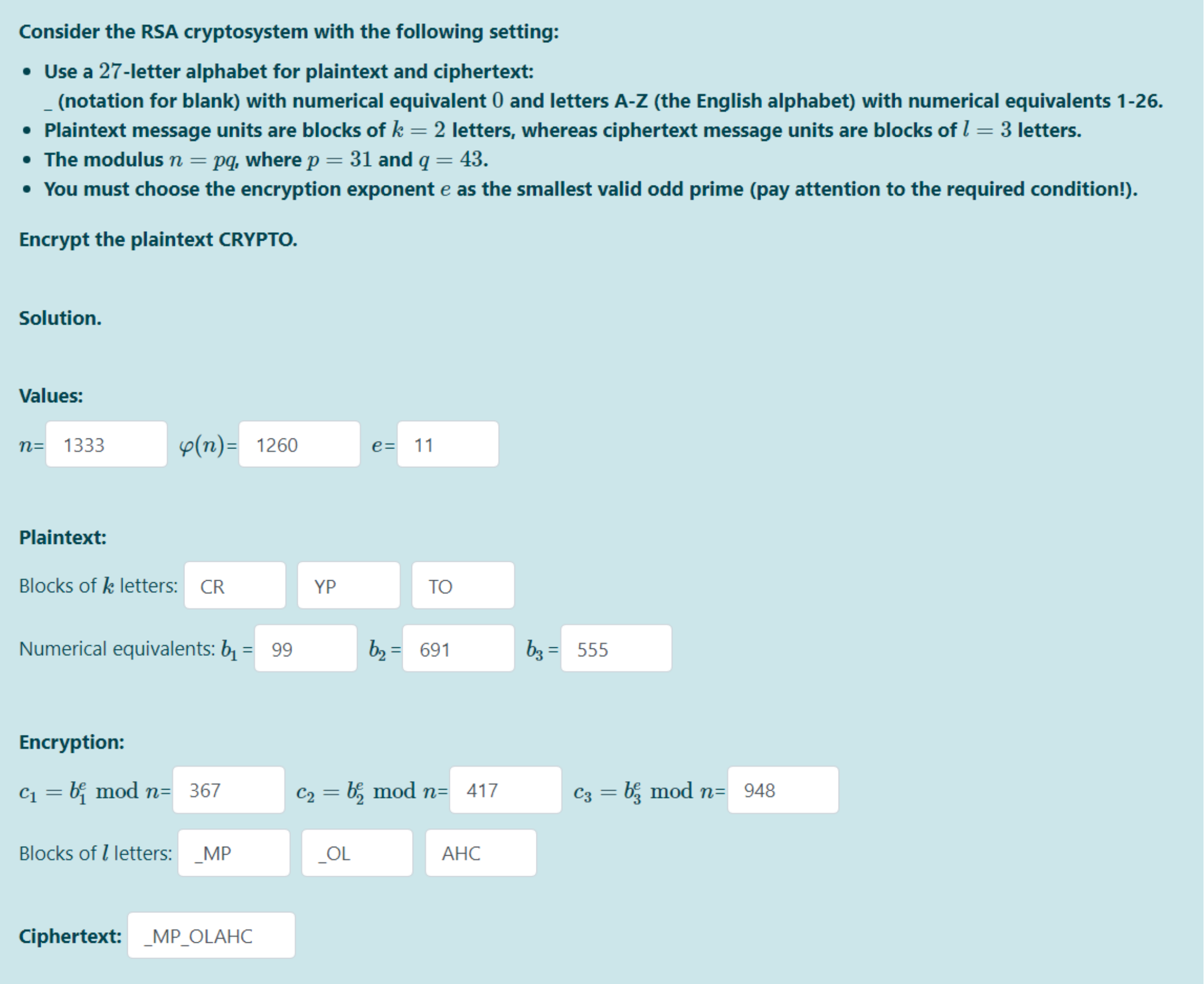

Consider the RSA cryptosystem with the following setting:

- **Use a 27-letter alphabet for plaintext and ciphertext:**
  _ (notation for blank) with numerical equivalent 0 and letters A-Z (the English alphabet) with numerical equivalents 1-26.
- **Plaintext message units are blocks of $k = 2$ letters, whereas ciphertext message units are blocks of $l = 3$ letters.**
- **The modulus $n = pq$, where $p = 31$ and $q = 43$.**
- **You must choose the encryption exponent e as the smallest valid odd prime (pay attention to the required condition!).**

Encrypt the plaintext CRYPTO.

Solution.

Values:

n= 1333 $\varphi(n)$= 1260 e= 11

Plaintext:

Blocks of k letters: CR YP TO

Numerical equivalents: b_1 = 99 b_2 = 691 b_3 = 555

Encryption:

$c_1 = b_1^e \bmod n$= 367 $c_2 = b_2^e \bmod n$= 417 $c_3 = b_3^e \bmod n$= 948

Blocks of l letters: _MP _OL AHC

Ciphertext: _MP_OLAHC