

## Answer on Question #83741 – Math – Combinatorics | Number Theory

### Question

7×TUSHER=6×HERTUS  
every alphabet here will be a number  
For Further information:  
T/U/S/H/E/R=0,1,2,3,4,5,6,7,8,9

SOLVE THE EQUATION ABOVE.

### Solution

Denote  $HER = a$ ,  $TUS = b$ . These are two 3-digit numbers.

Then

$$TUSHER = 1000b + a, \quad HERTUS = 1000a + b$$

We have

$$7(1000b + a) = 6(1000a + b)$$

from which

$$5993a = 6994b$$

or

$$461a = 538b$$

Since 461 and 538 are mutually prime numbers,  $a$  should be divisible by 538. The only 3-digit number divisible by 538 is 538. So  $a = 538$ , from which  $b = 461$ .

Hence the answer is  $H = 5, E = 3, R = 8, T = 4, U = 6, S = 1$ .

**Answer:**  $H = 5, E = 3, R = 8, T = 4, U = 6, S = 1$ .