Q1: Shouldn't have skipped algebra class

The input:

49276d206b696c6c696f3358996f757220627261696e206c696b65206120706f69736f6e
6f7573206d757368726f6f6d

Notice the equation $9 = 10^{4+6x}$

When we solve this equation, we get the value of x in the form

$x = \dfrac{a - b}{c}$

$(b + c) * c + b$ is a hint for the encryption used. What happens when you apply that encryption on the input string?

The flag is of the **format** *CTF{ Output_string }*