

6283 Great Deceiver

Once upon a time Baron Munchhausen traveled to the Moon. After that he often tells interesting stories about the Selenites. Recently Baron told us about their numeric system. They use a notation with negative radix!

Negative radix is quite hard for Humans, and even for Munchhausen. So, Baron did a trick to help himself on the Moon. He remembered all the numbers between 0 and n inclusively, which have the same notation for both Selenites' negative radix $-k$ and a more convenient positive radix k .

Munchhausen claims that he did that easily. But, you know, Baron can exaggerate a little. To catch him, you have to count how many numbers he must have remembered.

Note: the k -radix notation of a number x is a sequence of integers a_0, a_1, \dots, a_p such that $0 \leq a_i < |k|$ and $\sum_{i=0}^p a_i \cdot k^i = x$.

Input

The input will contain several test cases, each of them as described below.

The single line of the input contains two integer numbers n and k ($1 \leq n \leq 10^{15}$, $2 \leq k \leq 1000$).

Output

For each test case, write to the output on a line by itself.

Output the number of numbers Baron Munchhausen must have remembered during his stay on the Moon.

Note for the Sample:

In the first sample, Baron must have remembered numbers 0, 1, 2, 9, 10, 11, 18, 19 and 20.

For example, 19 has the same notation for both radix 3 and radix -3: $19 = 201_3 = 201_{-3}$, while 7 has not: $7 = 21_3 = 111_{-3}$.

In the second sample, the corresponding numbers are 0, 1, 4, 5, 16, 17, 20 and 21.

Sample Input

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21 3
21 2
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Sample Output

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9
8
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