B. Kolya and Tandem Repeat

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Kolya got string s for his birthday, the string consists of small English letters. He immediately added k more characters to the right of the string.

Then Borya came and said that the new string contained a *tandem repeat* of length l as a substring. How large could l be?

See notes for definition of a *tandem repeat*.

Input

The first line contains s ($1 \le |s| \le 200$). This string contains only small English letters. The second line contains number k ($1 \le k \le 200$) — the number of the added characters.

Output

Print a single number — the maximum length of the tandem repeat that could have occurred in the new string.

Examples

input
aaba 2
output
6

input
aaabbbb 2
output
6

input
abracadabra 10
output
20

Note

A tandem repeat of length $2n$ is string s, where for any position i ($1 \le i \le n$) the following condition fulfills: $s_i = s_{i+n}$.

In the first sample Kolya could obtain a string `aabaab`, in the second — `aaabbbbbb`, in the third — **abracadabrabracadabra**.