Problem F. Funny String

Source file name:	`F.c, F.cpp, F.java`
Input:	`Standard`
Output:	`Standard`
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A string is traditionally seen as a sequence of characters. Based on this definition of string, different types of strings can be defined, sorted strings for example are strings where for any consecutive pair of indexes i and j that you take in the string such that $i+1 = j$ when comparing the numeric values of the characters on those possitions S_i and S_j then $S_i \leq S_j$.

Let's now define a funny String. Funny strings are similar to a sorted string, just that they have a Funny factor F such that for any consecutive pair of indexes i and j that you take in the string such that $i+1 = j$ when comparing the numeric values of the characters on those possitions S_i and S_j then $S_i + F \leq S_j$.

Given a string S of lowercase characters. Can you determine what is the longest funny string that you can get by removing some characters from S ? For the input characters you can assume that the next character after "z" is "a", in such way if $S_i = z$ then $S_i + 1 = a$, $S_i + 2 = b$ and so on.

Input

The first line of input contains a number T, the number of test cases. Followed by T test cases, each test case contains a single line with the string S and the Funny factor F separated by a space.

- $2 \leq T \leq 100$
- $1 \leq F \leq 26$
- $1 \leq |S| \leq 10^3$

Output

For each test case you must print a line with a single integer. The length of the longest funny string that can be created removing some characters from S.

Example

Input	Output
2 abcdefghijklmnopqrstuvwxyz 1 zabd 2	26 3

Explanation

In the first case the given string is a funny string itself, therefore no characters should be removed.

In the second case you can remove the second character and the new string is a funny string with size $|S| - 1$.