

12594 Naming Babies

Every parent wants to have their child the most beautiful name. Everyone will call their beloved child using the name. If someday the child gets to be famous then he/she will be known by the name. So name is very important. But choosing name is not that easy for the people nowadays because the government have decided to put tax on the name.

You will be given a perfect name PN consisting of every character from ‘a’-‘z’ only once (That is permutation of lower case English alphabet). The tax of a name will be calculated with reference to PN . Suppose $PN = \text{“abcdefghijklmnopqrstuvwxyz”}$. For a name NM , the tax is the summation of taxes for its each character. Suppose the i -th character of NM is C_i . Let POS be the position of C_i in PN . So the tax for C_i will be $(i - POS) * POS$.

Suppose $NM = \text{“abazz”}$. So the taxes are:

$$\begin{aligned} i = 0, C_0 = \text{‘a’}, POS = 0, tax &= (0 - 0) * 0 = 0 \\ i = 1, C_1 = \text{‘b’}, POS = 1, tax &= (1 - 1) * 1 = 0 \\ i = 2, C_2 = \text{‘a’}, POS = 0, tax &= (2 - 0) * 0 = 0 \\ i = 3, C_3 = \text{‘z’}, POS = 23, tax &= (3 - 23) * 23 = -460 \\ i = 4, C_4 = \text{‘z’}, POS = 23, tax &= (4 - 23) * 23 = -437 \end{aligned}$$

So total tax for NM is $0 + 0 + 0 - 460 - 437 = -897$. As this is negative, that means instead of giving tax to government, government will pay 897 Tk to the name-holder’s parent.

Now the parents are applying a very clever trick. You can understand very easily that the longer a name the greater its tax. So after fixing a particular name NM , they are splitting it into exactly K parts (this value K is enforced by government). Each of this K parts are considered as a single name and thus the total tax becomes much less. For example if we split the name in the earlier example in two parts “aba” and “zz” the taxes becomes $0(0 + 0 + 0)$ and $-1035(-529 - 506)$ [Here, 0 is the cost of “aba” and -1035 is the cost for “zz”. That is — calculate tax separately for each of the K parts.]. So the sum is -1035 which is less than -895.

Now, given PN , NM and K , you need to find the minimum tax.

Input

First line will contain the number of test case, T ($T \leq 10$). Each case will contain PN and K ($0 < K \leq 500$) in the first line. The next line will contain a not empty string NM . Length of NM will be **at most** 20000 and greater than or equals to K and will consist of only lowercase letters.

Output

For each case print one line, ‘Case C : TX ’ (without the quotes), where C is the case number and TX is minimum tax.

Explanation: 3 parts for the last sample are “aabbb”, “cccc” and “cccc”. The corresponding taxes are 6 ($0 + 0 + 1 + 2 + 3$), -4 ($-4 -2 + 0 + 2$) and 0 ($-4 -2 + 0 + 2 + 4$).

So total tax is $6 - 4 + 0 = 2$.

Sample Input

```
3
abcdefghijklmnopqrstuvwxyz 2
abazz
```

```
abcdefghijklmnopqrstuvwxy 2  
abazz  
abcdefghijklmnopqrstuvwzy 3  
aabbcccccccc
```

Sample Output

```
Case 1: -1035  
Case 2: -1225  
Case 3: 2
```