Gulzig Rhedgehogs abreak

Assignment

Word processors need an algorithm to split a paragraph of text into lines that do not exceed a preset maximum length.

Several algorithms exist to achieve this and generally give rise to paragraphs that look different. Usually one wants a division that is not too "frayed", ie that all lines use the maximum length as best as possible. One way to quantify the "raggedness" is by sum of the squares of the differences between the maximum allowable length and the effective length of the different lines. In formula form this becomes:

$$\sum_{i=1}^{\text{number of rules}} (\text{maximum length} - \text{length rule } i)^2.$$

A simple algorithm for breaking down a paragraph is the following: always make lines that are as long as possible, ie if a word still completely fits on a line, this word is placed on that line. It is only when a word no longer fits on the current line that a new line is started. Because this algorithm does not take into account the words to come, we call it a greedy algorithm.

Suppose the text This is a breeze should be split into lines for which the maximum length is 7, then the described algorithm yields the following paragraph:

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- - - - + - -
This is
An
easy
```

The raggedness of this paragraph is:

$$(7-6)^2 + (7-3)^2 + (7-6)^2 = 1 + 16 + 1 = 18.$$

Your job is to calculate for a given text and maximum line length what the paragraph jaggedness is produced by the greedy algorithm described above.

Input

The first line contains the number of test cases. There are two rules for each test case. The first line of each test case contains the maximum length of the lines in the paragraph. The second line of each test case contains the text to be formatted using the greedy algorithm. This text consists of words that are separated from each other by a single space. There are no spaces before the first and after the last word. We promise that no word is longer than the maximum line length, and that the text always contains at least one word.

sample input
3
7
This is a breeze 7
Perfect
10
This edition is the best ever

Export

Print one line per test case. This line contains two numbers separated by one space:

- The first number represents the index of the test case. The first test case has index 1.

- The second number is the calculated jagged score.

sample output
1 18
2 0
3 77