F Document Dimensions

Time limit: 4s

Hermione was really proud of her one million word text she wrote for her assignment. She was, until she realized that the text must be handed in on a single piece of paper with limited dimensions. Obviously, she could have just shortened her text, but Hermione decided to go another route. She decided to just copy her text to a new piece of paper, writing a little bit smaller... To make this easier, she decided to first change the line breaks in her text such that the sum of the *height* and *width* of the piece of paper is minimized. Given Hermione's text with n words and assuming that each character takes

Hermione's text. Image by Chris Martin, Wikimedia

up one unit height and one unit width, what is the minimal *height* plus *width* that can be achieved by inserting line breaks? Note that two words which are on the same line need to be separated by a single space.

Input

The input consists of:

- One line with a single integer n ($1 \leq n \leq 10^6$), the number of words.

- One line with n space separated words w_i ($1 \leq |w_i| \leq 10^6$), consisting only of lowercase Latin letters.

It is guaranteed that the total length of the text, i.e. the sum of the lengths of the n words, is not greater than 10^6.

Output

Output a single integer, the sum of the *height* and *width* of the smallest piece of paper the text could fit on.

Notes

These are visualizations of the optimal result.

First testcase: $2 + 9$

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i␣am␣lord
voldemort
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Second testcase: $4 + 10$

```
i␣solemnly
swear␣that
i␣am␣up␣to
no␣good
```

Sample Input 1

4 i am lord voldemort

Sample Output 1

11

Sample Input 2

10 i solemnly swear that i am up to

Sample Output 2

14 no good