

Advanced Edit Distance

The edit distance of two strings S and T is the minimum number of edit operations that need to be done to transform S into T . The valid edit operations are:

- Insert a single character at any position.
- Modify an existing character.
- Remove an existing character.

For example, the edit distance of “pantera” and “aorta” is 5, because the following chain of edits is valid (and there is no shorter chain):

“pantera” \ggg “antera” \ggg “aotera” \ggg “aoera” \ggg “aora” \ggg “aorta”.

We define the advanced edit distance in a similar way, but adding the swap of two adjacent characters as an extra valid operation. With this setting, the advanced edit distance of “pantera” and “aorta” is 4:

“pantera” \ggg “antera” \ggg “antra” \ggg “aotra” \ggg “aorta”.

You need to write a program that calculates the advanced edit distance of two given words.

Input

The input contains several test cases. Each test case is described in a single line that contains two non-empty words, each of them of at most 1000 lowercase letters, separated by a single space. The last line of the input contains two asterisks separated by a single space and should not be processed as a test case.

Output

For each test case output a single line with an integer representing the advanced edit distance of the two input words.

Example

Input:

```
pantera aorta  
zero zero  
* *
```

Output:

```
4  
0
```