6901　String Transformation

A string is called to be well-formed if it can be generated by the following rules:

  (a) 'ab' is a well-formed string.

  (b) If S is a well-formed string, 'aSb' is also well-formed.

  (c) If S is a well-formed string, SS is also well-formed.

For example, 'aabbabab', 'abababab', and 'aaaabbbb' are well-formed strings.

For two well-formed strings, A and B, we want to transform A into B by performing successively the operation of exchanging adjacent characters. After performing each operation, the string should be well-formed. Let A = aabbabab and B = aaaabbbb. Then A can be transformed into B by five operations as follows:

$$aabba\underline{ba}b \rightarrow aabb\underline{aa}bb \rightarrow aabab\underline{ab}b \rightarrow aab\underline{aa}bbb \rightarrow aaa\underline{ba}bbb \rightarrow aaaabbbb.$$

Given two well-formed strings, A and B, you have to find the minimum number of operations which are needed for transforming A into B.

Input

Your program is to read from standard input. The input consists of T test cases. The number of test cases T is given in the first line of the input. Each test case consists of a line containing two well-formed strings A and B which are separated by a single space. The length of A is the same as the length of B, and is at least 2 and at most 100,000.

Output

Your program is to write to standard output. Print exactly one line for each test case. The line should contain the minimum number of the operations which are needed for transforming A into B. If the transformation is impossible, print '-1'.

The following shows sample input and output for two test cases.

Sample Input

```
2
aabbabab aaaabbbb
aabbab abaabb
```

Sample Output

```
5
2
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