Pens

Assignment 5
Data Structures and Algorithms

Problem Statement: You are given a master string S and a box of n different pens in a box. You are also given n other strings say t1,t2..tn. ith pen has the power to write any prefix of the ith string. You have to create the master string by using your pens. In one operation you pick a pen of your choice and write any prefix of the string attributed to it(as a contiguous string) and keep it back in the box. What is the minimum operations required to write the entire master string.(you can repeat pens)

Input
First line of input contains the master string S(only lower case alphabets).
Next line contains the number n.
Each ith of the next n lines contains smaller string ti(only lower case alphabets).
Output
Print a single number which is the minimum number of operations required if it is possible. Otherwise output -1.
Constraints
$1 \le |S| \le 10^5$
$1 \le N \le 10^4$
$1 \le |ti| \le 50$

Time Limit: 4 seconds
Memory Limit: 256 MB

Sample Test Case

Input	Output
knowledgeispower 7 know owl edge is dge pow wer	6

Input	Output
powerispower 3 pow pow eris	4

Explanation

In the 1st test case of sample,
Pick pen 1 and write kno.
Pick pen 2 and write owl.
Pick pen 3 and write edge.
pick pen 4 and write is.
pick pen 6 and write po.
pick pen 7 and write wer.