Hogwarts

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

Congratulations! You're admitted to Hogwarts! As the standard configuration of a freshman, you are equipped with a dictionary of all basic spells.

Actually, the dictionary of all basic spells S is a string of n lowercase Latin letters. Now we define the **magical power** of a spell A of m lowercase Latin letters as follows:

$$\sum_{i=1}^{m} \text{lcp}(suf_i(S), A)$$

where $suf_i(S)$ represents the suffix of S whose length is i, and $\text{lcp}(X, Y)$ represents the length of longest common prefix of X and Y.

Today, Professor Filius Flitwick is going to give you a quick test. He will ask you q questions. In ith question, you will be given a spell T_i, and you just need to answer the **magical power** of T_i. Now it's time to take the very first step toward being the greatest wizard!

Input

The first line contains two integers n and $q(1 \le n, q \le 3 \times 10^5)$, the length of S and the number of questions.

The second line contains one string S.

Each of the next q lines contains one string T_i. It's guaranteed that $\sum_{i=1}^{q} |T_i| \le 3 \times 10^5$.

Output

For every question, print a line containing the answer.

Example

standard input	standard output
13 2 magicialspell magic magician	5 7