Problem D: Power Strings

Given two strings a and b we define $a*b$ to be their concatenation. For example, if a = "*abc*" and b = "*def*" then $a*b$ = "*abcdef*". If we think of concatenation as multiplication, exponentiation by a non-negative integer is defined in the normal way: $a\char`\^0$ = "" (the empty string) and $a\char`\^(n+1) = a*(a\char`\^n)$.

Each test case is a line of input representing s, a string of printable characters. For each s you should print the largest n such that $s = a\char`\^n$ for some string a. The length of s will be at least 1 and will not exceed 1 million characters. A line containing a period follows the last test case.

Sample Input

```
abcd
aaaa
ababab
.
```

Output for Sample Input

```
1
4
3
```