

E. Pretty Song

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

When Sasha was studying in the seventh grade, he started listening to music a lot. In order to evaluate which songs he likes more, he introduced the notion of the song's *prettiness*. The title of the song is a word consisting of uppercase Latin letters. The *prettiness* of the song is the *prettiness* of its title.

Let's define the *simple prettiness* of a word as the ratio of the number of vowels in the word to the number of all letters in the word.

Let's define the *prettiness* of a word as the sum of *simple prettiness* of all the substrings of the word.

More formally, let's define the function $vowel(c)$ which is equal to 1, if c is a vowel, and to 0 otherwise. Let s_i be the i -th character of string s , and $s_{i..j}$ be the substring of word s , starting at the i -th character and ending at the j -th character ($s_{isi+1}\dots s_j$, $i \leq j$).

Then the *simple prettiness* of s is defined by the formula:

The *prettiness* of s equals

Find the *prettiness* of the given song title.

We assume that the vowels are I, E, A, O, U, Y .

Input

The input contains a single string s ($1 \leq |s| \leq 5 \cdot 10^5$) — the title of the song.

Output

Print the *prettiness* of the song with the absolute or relative error of at most 10^{-6} .

Examples

input
IEAIAIO
output
28.0000000

input
BYOB
output
5.8333333

input
YISVOWEL
output
17.0500000

Note

In the first sample all letters are vowels. The *simple prettiness* of each substring is 1. The word of length 7 has 28 substrings. So, the *prettiness* of the song equals to 28.