3313 Do You Read Me?

The readability score of a piece of text is a measure of how difficult it is to read. There is a variety of ways readability can be computed. In this problem you will have to calculate various readability scores for a given set of texts.

The readability scores are defined in terms of simpler constructs:

- Characters. The number of alphabetic characters ('`a`'..'`z`', and '`A`'..'`Z`') in the text.
- Syllables. A syllable contains at least one alphabetic character. In the input texts you will be given, each multi-syllable word has already been split into its syllables. If a word contains more than one syllable, they are separated by a vertical bar ('`|`'). For instance, "`hap|pen`" is a word containing 2 syllables, while "`no`" is a word containing a single syllable. The vertical bar will be used exclusively in the text for the separation of syllables and will always be used correctly, so there will not be input like "`|cat`" or "`dog||gie`".
- Words. A word is a series of alphabetic characters (with possible embedded vertical bars) surrounded by non-alphabetic characters, including the beginning and end of line. For instance, in the following text, there are 18 words:

  ```
  Hello world! This is a sample text containing 18 words. B4 u rush through this, beware: This1is tricky.
  ```

  In particular, "`18`" is not a word, "`B4`" contains the word ("**B**"), and "`This1is`" contains two words ("`This`" and "`is`"). Since no words are divided into syllables, this text also has 18 syllables.

  The following text has 6 words and 9 syllables:

  ```
  Hel|lo world! Guess what hap|pened to|day?
  ```

- Sentences. A sentence is a series of one or more words followed by optional spaces, and then a period ('`.`'), a question mark ('`?`'), or an exclamation point ('`!`'). For instance, the following text contains two sentences (note that the blank line between them does not constitute a sentence in itself and the second exclamation point at the end does not count as ending a sentence, since there is no word between it and the previous sentence):

  ```
  When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

  Yes !!
  ```

The following formulas define the readability scores you should calculate for each text:

- Kincaid score $= 11.8 \times \frac{SYLLABES}{WORDS} + 0.39 \times \frac{WORDS}{SENTENCES}$
- Automated Readability Index $= 4.71 \times \frac{CHARACTERS}{WORDS} + 0.5 \times \frac{WORDS}{SENTENCES} - 21.43$
- Coleman-Liau score $= 5.89 \times \frac{CHARACTERS}{WORDS} - 0.3 \times \frac{SENTENCES}{WORDS*100} - 15.8$
- Fog Index $= 0.4 \times \left(\frac{WORDS}{SENTENCES} + 100 \times \frac{WORDS3}{WORDS}\right)$

- Lix score = $\frac{WORDS}{SENTENCES} + 100 \times \frac{WORDS6}{WORDS}$

where

- $WORDS$: The number of words in the text
- $WORDS3$: the number of words that contain 3 or more *syllables* in the text
- $WORDS6$: the number of words that contain 6 or more *characters* in the text
- $SENTENCES$: the number of sentences in the text
- $SYLLABLES$: the number of syllables in the text
- $CHARACTERS$: the number of alphabetic characters in the text

Input

Each data set starts with a line containing a single integer text size, n ($0 \leq n \leq 100$). This is followed by n lines comprising the text to be analyzed. Each piece of text to be analyzed will contain at least one sentence. The end of input is marked by a text size of '0'. This data set should not be processed.

Output

For each data set, there should be a line reporting the readability scores for the corresponding text. This line should be formatted as follows:

K=< K > ARI=< ARI > CL=< CL > FOG=< FOG > LIX=< LIX >

where < K > is the Kincaid score, < ARI > is the Automated Readability Index, < CL > is the Coleman-Liau score, < FOG > is the Fog Index, and < LIX > is the Lix score for the text.

Each of these values must be printed with exactly two digits after the decimal point, rounded to the last digit.

Sample Input

```
1
Hel|lo World! Guess What Hap|pen|ed to|da|y ?
3
I am Sam.
Sam I am.
Do you like green eggs and ham?
0
```

Sample Output

```
K=22.80 ARI=5.19 CL=15.61 FOG=14.53 LIX=19.67
K=13.49 ARI=-6.22 CL=0.51 FOG=1.73 LIX=4.33
```