Assignment 5: Triangle of Words

5.1 The Power Function

C provides the power function `pow` accepting two double arguments, b and e, and returning b^e in double, i.e. b^e in math is `pow(b, e)` in C. The function `pow` is declared in `<math.h>`. The following code shows an example of how to use `pow`:

```c
#include <stdio.h>
#include <math.h>

int main()
{
    for (double e = 0.0; e < 5.0; e++) {
        double dunit = pow(10.0, e * 3.0), bunit = pow(2.0, e * 10.0);
        printf("%13.0f vs %13.0f\n", dunit, bunit);
    }
    return 0;
}
```

The example program compares the decimal units and the binary ones.

5.2 Programming Assignment 5: tarea.c

According to Heron (Heron of Alexandria, 60 AD, a Greek mathematician), the area of a triangle with lengths of three sides, a, b, and c, can be calculated using the following formula:

$$A(a, b, c) = \sqrt{s(s-a)(s-b)(s-c)}$$
$$where \ s = (a + b + c)/2$$

Given three alphabetic words, calculate the area formed by three points in a two-dimensional Cartesian plane where the coordinate (x, y) of a word w is determined by the number of character classes: x is the number of vowels and y is the number of consonants in w.

For example, given three words, $\{$Hello, Coding, World$\}$, the coordinates of them are $(2, 3)$, $(2, 4)$, and $(1, 4)$ and the area of the triangle formed by these points is 0.5 since the lengths of three sides are 1, 1, and $\sqrt{2}$.

The input consists of a single line in standard input. The input line consists of three words separated by space. The maximum length of a word is 40. Your program should print the area of the triangle formed by three points each of which is formed by the word. If the points do not form a triangle, just print zero which is automatically calculated by Heron's formula. The area should be printed to standard output rounded to three decimal places after the decimal point.

Additional requirements for bonus points

- Define and use the function calculating the area with three `double` and returning the area of the triangle formed by the lengths of three sides.

- Check the quality of your code to confirm that there are no style issues.

Input	Output
`Hello Coding World`	`0.500`
`Hey oh Day`	`0.000`