

Palindromes



Given a string, you keep swapping any two characters in the string randomly till the string becomes a palindrome. What is the **expected number** of swaps you will make? There will always be at least one palindrome which can be formed with the letters of the given string.

Input:

The first line contains the number of test cases T. Each of the next T lines contains a string each.

Output:

Output T lines containing the answer for the corresponding test case. Print the answer rounded to exactly 4 decimal places.

Constraints:

$T \leq 10000$

The length of the string will be at most 8 characters.

The string will consist of only lower-case letters 'a'-'z'.

Sample Input:

```
4
b
bb
abb
cbaabbb
```

Sample Output:

```
0.0000
0.0000
3.0000
59.3380
```

Explanation:

For the first two cases, the string is already a palindrome so no swaps are needed.

For the third case, there are 3 possible swaps. The string will become "bab", "bba" or remain "abb" with 1/3rd probability each. It's easy to see that the expected number of swaps needed is 3.0000

For the last case, the answer is 59.337962..., which should be printed as 59.3380