

Iterables and Iterators

The *itertools* module standardizes a core set of fast, memory efficient tools that are useful by themselves or in combination. Together, they form an *iterator algebra* making it possible to construct specialized tools succinctly and efficiently in pure *Python*.

To read more about the functions in this module, check out their [documentation here](#).

You are given a list of N lowercase English letters. For a given integer K , you can select any K indices (assume 1-based indexing) with a uniform probability from the list.

Find the *probability* that *at least* one of the K indices selected will contain the letter: ' a '.

Input Format

The input consists of three lines. The first line contains the integer N , denoting the length of the list. The next line consists of N space-separated lowercase English letters, denoting the elements of the list.

The third and the last line of input contains the integer K , denoting the number of indices to be selected.

Output Format

Output a single line consisting of the *probability* that *at least* one of the K indices selected contains the letter: ' a '.

Note: The answer must be correct up to 3 decimal places.

Constraints

$$1 \leq N \leq 10$$

$$1 \leq K \leq N$$

All the letters in the list are lowercase English letters.

Sample Input

```
4
a a c d
2
```

Sample Output

```
0.8333
```

Explanation

All possible unordered tuples of length 2 comprising of indices from 1 to 4 are:

(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)

Out of these **6** combinations, **5** of them contain either index **1** or index **2** which are the indices that contain the letter '**a**'.

Hence, the answer is $\frac{5}{6}$.