# Iterables and Iterators

HackerRank

**Problem Statement**

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 $\frac{5}{6}$.