H – House

Memory limit: 1024 MB
Time limit: 2 s

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Byteasar would like to build a wooden house. He has n pieces of wood of lengths $a_1, \ldots, a_n$ and equal heights. That wood will be used for the walls of the house.

Byteasar decided that the floor of the house will be a rectangle, and he would like to make it as big as possible. For a rectangle floor of size $x \times y$, the area of the house will be $x \cdot y$.

The house will have four walls, each being a rectangle. For each wall Byteasar will use exactly k planks that will be stacked on top of each other. Therefore he will need $2k$ planks of length x and $2k$ planks of length y.

Byteasar is free to cut the pieces of wood into planks however he likes. Thus from a single piece of wood of length a_i he can obtain any sequence of planks of real lengths $b_1, \ldots, b_m$ as long as $b_1 + \cdots + b_m \leq a_i$. Byteasar does not have to use all the wood; any leftover scraps may remain.

Help him and calculate the maximal area of the house he can obtain.

Input

The first line of the input contains two integers n and k ($1 \leq n \leq 1000$; $1 \leq k \leq 30$), denoting the number of pieces of wood and the height of the walls.

In the second line there is a sequence of n integers $a_1, \ldots, a_n$ ($1 \leq a_i \leq 1000$), denoting the lengths of the pieces of wood.

Output

Write one real number, the maximal possible area of the house (that is, the maximal value of $x \cdot y$, provided that Byteasar can obtain $2k$ planks of length x and $2k$ planks of length y).

The allowable relative or absolute error is 10^{-9}. That is, if you output S and the correct exact result is R, then it must hold that $|S - R| \leq 10^{-9} \cdot \max(1, R)$. You may print at most 20 digits after the decimal point.

Example

For the input data:
```
1 5
10
```

a correct result is:
```
0.25
```

Whereas for the input data:
```
5 1
6 7 1 3 2
```

a correct result is:
```
12
```

And for the input data:
```
5 7
1 4 5 7 5
```

a correct result is:
```
0.602
```

Explanation: In the first example we need 20 planks (5 for each wall). The best is to cut the only piece of wood into 20 equal parts of length 0.5 each, and build a house of area $0.5 \cdot 0.5 = 0.25$.

In the second example we have two distinct solutions that allow to obtain a house of area 12:

- For a house of size 6×2, we need to shorten a piece of length 7 to 6 and a piece of length 3 to 2.
- For a house of size 4×3, we need to cut a piece 7 into planks of length 3 and 4, and shorten a piece 6 to 4.

In the third example, the optimal house has dimensions 0.7×0.86. The picture below shows how to obtain 14 planks of length 0.86, 14 planks of length 0.7 and two scraps of length 0.14 and 0.02: