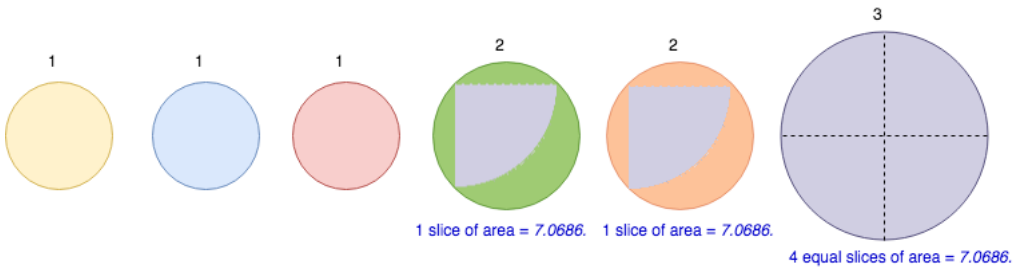
☆ Office Party

There is an office party to celebrate the last quarter's performance with cake for everyone! Many different circular cakes are ordered.
Given the radii of the circular cakes and the number of guests, determine the largest piece that can be cut from the cakes such that every guest gets a piece with the same area. It is not possible that a single piece has some part of one cake and some part of another cake. To be fair, every guest is served only one piece of cake.

NOTE: Use *3.14159265359* as the value of pi and return the answer rounded to *4* places after the decimal. The answer is accepted if the absolute error is within 10^{-4} *i.e (1e-4)*.

For example, there are *6* cakes with *radii = [1, 1, 1, 2, 2, 3]* and there need to be *numberOfGuests = 6* equal size pieces. Area of a cake with radius *r* is calculated as *(pi * radius * radius)*.

- For radii *1, 2* and *3*, the areas are *3.14159265359, 12.5663706156,* and *28.2743338851 units*^{2}.
- It would be possible to serve everyone a piece that matches the area of the circle with radius *1*, but that would not be the biggest piece possible that can be served to everyone.
- The best way to cut the cakes is to cut the largest cake into *4* pieces (area *= 28.743338851 / 4 = 7.068583471275)* and a similar size piece from each of the cakes with radius *2*.
- So, the answer is *7.0686*.



Determine the largest piece that can be cut given the above conditions.

Function Description

Complete the function *largestPiece* in the editor below. The function must return the maximum possible area of each piece of cake rounded to *4* decimals and cast as a string.

largestPiece has the following parameters:
radii[radius[0],...radius[n-1]]: an array of integers where i^{th} element denotes the radius of the i^{th} cake
numberOfGuests: an integer, the number of guests

Constraints

- $1 \le size\ of\ radii \le 10^5$
- $1 \le radii_i \le 10^4$ *(where* $0 \le i \le size\ of\ radii$*)*
- $1 \le numberOfGuests \le 10^5$

Input Format For Custom Testing

The first line contains an integer, *n*, that denotes the number of elements in *radii*.

Each line *i* of the *n* subsequent lines (where $0 \le i < n$) contains an integer that describes $radii_i$.
The last line contains an integer, *numberOfGuests*, that denotes the number of guests at the party.

Sample Case 0

```
3
3
3
```

Sample Output

```
28.2743
```

Explanation

There are *3* cakes of *radius = [4, 3, 3]*. Each can have a piece as large as the smallest cake, $radius_1 = radius_2 = 3$. The area of each slice can be *pi * r * r = pi * 3 * 3 = 28.2743 units*^{2}.

Sample Case 1

Sample Input For Custom Testing

```
1
5
5
```

Sample Output

```
15.7079
```

Explanation

The area of the entire cake with $radii_0 = 5$ is *pi * 5 * 5 = 78.5398163475*. Divide that into *numberOfGuests = 5* pieces of *15.7079 units*^{2}

YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour

Draft saved 02:02 pm | View Code Diff | Java 8

```
1   import java.io.*;⋯
14
15  class Result {
16
17      /*
18       * Complete the 'largestPiece' function below.
19       *
20       * The function is expected to return a STRING.
21       * The function accepts following parameters:
22       *  1. INTEGER_ARRAY radii
23       *  2. INTEGER numberOfGuests
24       */
25
26      public static String largestPiece(List<Integer> radii, int numberOfGuests) {
27      // Write your code here
28
29      }
30
31  }
32
33  public class Solution {⋯
```

Line: 14 Col: 1

Download sample test cases *The input/output files have Unix line endings. Do not use Notepad to edit them on windows.*

1
2
3
4
5
6