Problem name: Roots
Input File: RootsIn.txt

The square root of a number, y, can be found using Newton's Approximation Formula. In this approximation technique x_0, x_1, x_2, … are a sequence of successive approximations of the square root of y defined as follows:

x_0 = a seed value
for all $i > 0$, $x_{i+1} = (1/2) * ((y / x_i) + x_i)$

Both y and x_0 must be positive.

You are to demonstrate that Newton's Approximation Formula converges on a given number's square root by outputting the successive approximations until the approximation is within a given tolerance of the number's square root.

Inputs:

The first line will contain the tolerance to be used to terminate the successive approximations followed by the seed value. The next line will contain the number of values whose square root is to be calculated followed by the values themselves, one per line.

Outputs:

There will be one output grouping per calculated square root. Each grouping will contain the successive approximations of the square root of the given number, beginning with x_0, one approximation per line until the calculated approximation is within the given tolerance of the actual square root of the number. Each line in the grouping will contain the value of the approximation, the actual square root of the number, and finally the difference between the calculated and actual square root of the number. Three digits will be displayed to the right of the decimal point. Groupings will be separated by a blank line.

Sample Input:

```
0.05 1234.0
2
49.34
10765.42
```

Sample Output:

```
1234.000        7.024        1226.976
617.020         7.024        609.996
308.550         7.024        301.526
154.355         7.024        147.331
77.337          7.024        70.313
38.988          7.024        31.963
20.127          7.024        13.102
11.289          7.024        4.265
7.830           7.024        0.806
```

7.066	7.024	0.041
1234.000	103.757	1130.243
621.362	103.757	517.605
319.344	103.757	215.587
176.527	103.757	72.771
118.756	103.757	14.999
104.704	103.757	0.947
103.761	103.757	0.004