

Problem B. Lightbulbs

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Thomas Edison is actively working on a better version of a lightbulb. During that process, he covers entire fields with batches of lightbulbs and conducts tests on them. In his current experiment, he arranged N rows with M lightbulbs in each row. Each lightbulb has a chance P of working, otherwise, it's faulty and won't light up. Thomas wants to find the expected value of the length of the longest horizontal sequence of lightbulbs that are working.

For example, in the setup below, where 1 is a working lightbulb and 0 is faulty, the length of the longest horizontal sequence of lightbulbs that are working is 3, since there are three consecutive ones in the second row (and also in the fourth row).

```
1 0 1 1
0 1 1 1
0 1 0 0
1 1 1 0
1 1 0 1
```

Note that we're interested in horizontal sequences only.



Input

You're given three numbers separated by spaces – positive integers N and M , and a real number P . $1 \leq N, M \leq 2000$, $0 \leq P \leq 1$.

Output

Output the answer to the problem. Your answer would be considered correct if its absolute or relative error is less than 10^{-4} .

Examples

standard input	standard output
2 3 0.5	1.828125000000
47 74 1	74.000000000000