Problem C. Testing Subjects Usually Die

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

Hello, and again, welcome to the Aperture Science Enrichment Center.

You wake up in an unfamiliar room and a robotic voice greets you. You're in trouble.

The voice explains that you're being a subject of an ethically questionable series of experiments. The test you're undergoing right now goes as follows. An AI picked an integer number from 1 to n in such a way that the number k had a probability $\frac{p_k}{p_1 + \cdots + p_n}$ to be picked. You need to guess the number.

If you guess it incorrectly, you'll be put to sleep, your memory will be erased and you will undergo the same test again. With a probability of c percent, the number chosen by the AI will be re-picked by the same procedure and with a probability of $100 - c$ percent, it will stay the same.

You have no idea how many times you already participated in this test and what numbers you have picked before, but you clearly want to spend as little time on it as possible. Therefore, you will choose a probability distribution $q_1, \ldots, q_n$ and will say the number k with the probability q_k.

What is the minimum expected number of guesses you need to make before completing the test?

Input

First line of input contains two integers n and c ($2 \le n \le 10^5$, $0 \le c \le 100$).

Second line of input contains n integer numbers $p_1, \ldots, p_n$ ($1 \le p_i \le 10^3$).

Output

Output a single floating-point number, which is the minimum possible expected number of guesses.

Your answer will be considered correct if its absolute or relative error doesn't exceed 10^{-6}.

Examples

standard input	standard output
4 100 25 25 25 25	4
2 0 1 4	1.800000000

Note

For the purposes of this task, a probability distribution is a sequence of real numbers $q_1, \ldots, q_n$ such that $0 \le q_i$ and $q_1 + \cdots + q_n = 1$.