Tariff-ied

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Prof. Chen is running for president of Pigeland and has proposed a tariff strategy that could bring enormous profits to the country.

For a trade route consisting of n countries, all tariffs initially start at 0%. Each time the i-th country increases its tariff, it rises by l_i%. If the i-th country raises its tariff t_i times, the tariff becomes $\frac{l_i \cdot t_i}{100}$, meaning a commodity priced at x passing through this country will become $\left(1 + \frac{l_i \cdot t_i}{100}\right) \cdot x$.

Prof. Chen plans to raise tariffs a total of k times, which can be distributed arbitrarily among any of the countries. Your task is to help Prof. Chen determine the maximum possible price multiplier for a commodity passing through all n countries in sequence after optimally allocating these k tariff increases.

Input

The input contains multiple test cases. The first line contains an integer T ($1 \le T \le 5\,000$), denoting the number of test cases.

For each test case, the first line contains two integers n, k ($1 \le n \le 40, 1 \le k \le 10^6$), denoting the number of countries and the total number of tariff increases.

The following line contains n integers. The i-th integer l_i ($1 \le l_i \le 100$) denoting the increase rate of the tariff of the i-th country is l_i%.

Note that there is **no additional constraints** on the sum of n and the sum of k.

Output

Output a single real number in a single line, denoting the answer.

Your answer will be considered correct if its absolute or relative error does not exceed 10^{-4}. Formally, let your answer be a, and the jury's answer be b. Your answer will be considered correct if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-4}$.

Example

standard input	standard output
2 3 5 50 100 50 10 1000000 1 2 3 4 5 6 7 8 9 10	9 3.63944265968e+36

Note

For the first test case, the optimal allocation of tariff increases is $2, 2, 1$. The tariffs for the three countries become $100\%, 200\%, 50\%$ respectively, so the final answer is $2 \cdot 3 \cdot 1.5 = 9$.