0/1 Knapsack With Real Weight

Time limit: 1 sec

You have a bag that can hold several items of total weight **W**. There are **N** items, numbered from 1 to **N**. Item #i weights $\mathbf{w_i}$ and has a price of $\mathbf{v_i}$. We have to select some of these items such that the summation of the weight of the selected item does not exceed **W** and the summation of their price is maximum. The item cannot be broken into smaller part, we either take each item as a whole or does not take it at all. We have to find the maximum total value of item that we can take without exceeding the weight limit of the bag.

In this problem, the weight and the value of the items are real number.

Input

- The first line of input contains two numbers **W** and **N** where **W** is a real number while **N** is an integer (1 <= W,N <= 100)
- The next lines contains **N** real numbers that give $\mathbf{v_i}$, starting from $\mathbf{v_1}$ to $\mathbf{v_n}$
- The next lines contains **N** real numbers that give $\mathbf{w_i}$, starting from $\mathbf{w_1}$ to $\mathbf{w_n}$

  The items are given in increasing order of weight.

Output

The output must contain exactly one line containing the summation of selected price. We suggest output of 4 fractional digits. The judge will accept any solution that differs from the best answer less than 0.00001%

Example

Input	Output
10.0 4 1.2 3.4 6.3 1.3 4.2 1.4 6.7 4.3 9.7	9.7