Demiana has n jewelry. Each jewel has value v_i and weight w_i.

Since her husband, Johnny, was fired in connection with the latest financial crisis, Demiana has decided to sell several jewelry.

For herself, she decided to leave only k best. The best in terms of maximizing a rather specific expression: let her leave for herself the jewelry number $i_1, i_2, \ldots, i_k$, then the maximum should be

$$\sum_{j=1}^{k} v_i \sum_{j=1}^{k} w_i.$$

Help the Demians determine what maximum value of this value can be obtained by choosing k jewels in the required way.

The first line of input contains the numbers n and k ($1 \leq k \leq n \leq 1000$).

The next n lines contain pairs of integers v_i, w_i ($0 \leq v_i 10^6$, $1 \leq w_i \leq 10^6$). The sum of all v_i does not exceed 10^7, the sum of all w_i also does not exceed 10^7.

Print one real number – the maximum value of the desired quantity. The answer must be rounded and displayed with an accuracy of **exactly** 5 decimal places.

Sample input:

3 2
1 1
1 2
1 3

Sample output:

0.66667