Intellectual Shopping

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

Though Helen is a well-payed engineer in a well-known company she enjoys saving money a lot! This time she wants to find out how to use promotions in the neighboring grocery to optimize her purchases.

Every time Helen visits the shop she buys exactly n items. The i-th item costs c_i burles. During the j-th day, shop offers the following promotion. For every x_j items you buy you pay only y_j part of the full price for the least valuable item in this group. That means Helen can save some money by splitting her n items in groups of size x_j (and, possibly, one group of a smaller size) and paying less for one item in each group except the smaller one if it is present.

Shop has already announced promotions for m next days. Help Helen compute the minimum amount of money she needs to purchase all n items on each of these days.

Input

The first line of the input contains two integers n and m ($1 \le n, m \le 300\,000$), the number of items Helen purchases during every visit to the shop and the number of promotions to consider.

The second line contains n integers $c_1, c_2, \ldots, c_n$ ($1 \le c_i \le 10^9$), costs of individual items.

Then follow m. The j-th of these lines contains integer x_j and real value y_j ($2 \le x_j \le 300\,000$, $0 \le y_j \le 1$) — parameters of the j-th day promotion. Real values y_j are given with no more than six digits after decimal point.

Output

Print m real values. The i-th of them should be equal to the minimum possible amount of money required to purchase all n items on the i-th day. Your answer will be considered correct if its absolute or relative error doesn't exceed 10^{-6}.

Examples

standard input	standard output
4 2 1 1 1 1 2 0.75 3 0	3.5000000000 3.0000000000
3 3 10 9 2 2 0.5 3 0.2 4 0	16.5000000000 19.4000000000 21.0000000000