Infinity war without Avengers!

Input file:	**standard input**
Output file:	**standard output**
Time limit:	2 seconds
Memory limit:	100 megabytes

(Spoiler Alert!!!)

We all know about the great warrior Thanos. He was not a hero, but he was great. He tried to wipe out half of the population to reduce the population density in the earth. But we all know (do we really?) he couldn't make it for the Avengers. They fought for us and they succeded. Yah, it's kinda obvious, heroes will always win (except the game of thrones). Whatever Thanos is going to execute his **Plan-B**. He's gonna kidnap half of the population and then he will kill them manually. So he kidnapped n people and put them in a row. Now he'll kill them one by one. But the problem is, Avengers are in a vacation, so you have to defeat Thanos. So you went to Thanos, and since you don't have any super-power, you used the money! You offered him lots of money and he was happy to hear it since he's kinda greedy. So you have to rescue all of the n people one by one. Every person has different(or same) weight. Now you have to remember the following things:

- You can rescue the leftmost or the rightmost person in 1 second.

- If you rescue a person in **x-th second** who has weight **w**, you have to pay $x \times w$ dollars.

Now you have to rescue all of them one by one and also, you have to minimize the total cost. Can you do this?

Input

The first line will give you N, the number of people in the row. The next line, you're given N numbers, i-th number $(0 \leq i < N)$ denotes the weight of i-th person.

Output

You have to print the total cost. Cost should be minimized.

Scoring

Subtask 1 (4 Points) : $N \leq 2000, a_i \leq 10^5$ and The weights will be in increasing order.

Subtask 2 (6 Points) : $N \leq 2000, a_i \leq 10^5$ and The weights will be in decreasing order.

Subtask 3 (20 Points) : $N \leq 15, a_i \leq 10^5$.

Subtask 4 (30 Points) : $N \leq 100, a_i \leq 10^5$.

Subtask 5 (40 Points) : $N \leq 2000, a_i \leq 10^5$.

Example

standard input	standard output
5 2 4 6 2 5	53

Note

In the sample test, we can take people in this order (in index) : 5,4,3,2,1. The sum will be $5.1 + 2.2 + 6.3 + 4.4 + 5.2 = 53$ which is minimized.