VSR and deadlines

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Quarantine has not robbed IIITD students of deadlines! Vishal has been given n deadlines and has k days to complete them. Singh wanted to help him, so he gave Vishal the amount of work w_i needed to complete the i^{th} deadline. Vishal would like to wrap up as much work as he can, i.e., at the end of k days, he would prefer if the total amount of work left is the least possible value. In other words, if Vishal completes a_i units of the i^{th} deadline, he would like to minimize $W = \sum_{i=1}^{n}(w_i - a_i)$.

Vishal has a system for completing deadlines. Each day, he can choose to work on atmost 1 deadline. If the amount of work left for the chosen deadline is w, he only completes $\lceil \frac{w}{2} \rceil$ units of work and hopes he can complete the rest at some later stage.

There is no one who knows Vishal better than Rajput. Completing deadlines can be a boring task and Rajput knows that for completing a_i units of the i^{th} deadline, Vishal will be bored by $b_i \cdot a_i$ units. Vishal would still like to complete the maximum amount of work that he can, however, if there are multiple optimal approaches, he would want to complete the tasks in an approach which provides the least boredom.

You are tasked with helping Vishal, Singh and Rajput so that Vishal is able to minimise the value W and if there are multiple ways to achieve the minimum value of W, he would like to follow the approach which minimises $B = \sum_{i=1}^{n} b_i \cdot a_i$, where a_i is the number of units of deadline i completed by Vishal.

Input

The first line contains a single integer t, the number of test cases. $(1 \le t \le 5)$.
Then t testcases follow. Each testcase consists of 3 lines:

- The first line contains 2 space separated integers n $(1 \le n \le 10^5)$ and k $(1 \le k \le 10^5)$.
- The second line contains n space separated integers denoting the work units required to complete the deadlines $(1 \le w_i \le 10^6)$
- The third line contains n space separated integers denoting the boredom acquired for completing 1 unit of the i^{th} deadline. $(1 \le b_i \le 10^6)$

Output

For each testcase output 2 space separated integers W and B, where W is the amount of work left and B is the total boredom acquired. Answer each testcase in a new line.

Example

standard input	standard output

1
4 4
1 2 3 4
5 3 1 1
	4 6

Note

In the above sample case:
On day 1, Vishal completes $\lceil \frac{3}{2} \rceil = 2$ units of deadline 3.
On day 2, Vishal completes $\lceil \frac{4}{2} \rceil = 2$ units of deadline 4.
On day 3, Vishal completes $\lceil \frac{2}{2} \rceil = 1$ units of deadline 4.
On day 4, Vishal completes $\lceil \frac{1}{2} \rceil = 1$ units of deadline 3.
The total work done is 6 units. Therefore the amount of work left is 1 + 2 + 3 + 4 - 6 = 4.
The boredom value is 2·1 + 2·1 + 1·1 + 1·1 = 6 units.

Due to large I/O, it is recommended to use the provided reader class. As usual, you are not allowed to use Java's Collections framework or inbuilt algorithms' implementation.