Problem F. GCD and MST

Time limit 2000 ms
Mem limit 262144 kB

You are given an array a of n ($n \geq 2$) positive integers and an integer p. Consider an undirected weighted graph of n vertices numbered from 1 to n for which the edges between the vertices i and j ($i < j$) are added in the following manner:

- If $gcd(a_i, a_{i+1}, a_{i+2}, \ldots, a_j) = min(a_i, a_{i+1}, a_{i+2}, \ldots, a_j)$, then there is an edge of weight $min(a_i, a_{i+1}, a_{i+2}, \ldots, a_j)$ between i and j.
- If $i + 1 = j$, then there is an edge of weight p between i and j.

Here $gcd(x, y, \ldots)$ denotes the greatest common divisor (GCD) of integers x, y, ...

Note that there could be multiple edges between i and j if both of the above conditions are true, and if both the conditions fail for i and j, then there is no edge between these vertices.

The goal is to find the weight of the minimum spanning tree of this graph.

Input

The first line contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases.

The first line of each test case contains two integers n ($2 \leq n \leq 2 \cdot 10^5$) and p ($1 \leq p \leq 10^9$) — the number of nodes and the parameter p.

The second line contains n integers $a_1, a_2, a_3, \ldots, a_n$ ($1 \leq a_i \leq 10^9$).

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

Output t lines. For each test case print the weight of the corresponding graph.

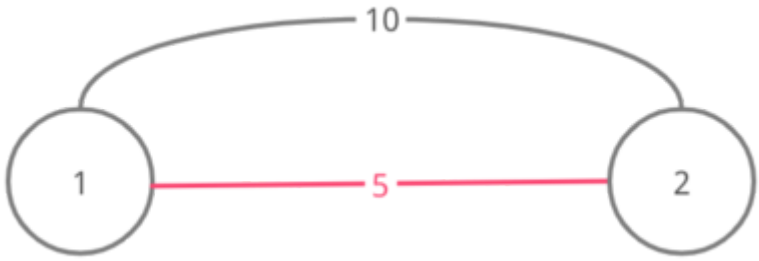
Sample 1

Input	Output
4 2 5 10 10 2 5 3 3 4 5 5 2 4 9 8 8 5 3 3 6 10 100 9 15	5 3 12 46

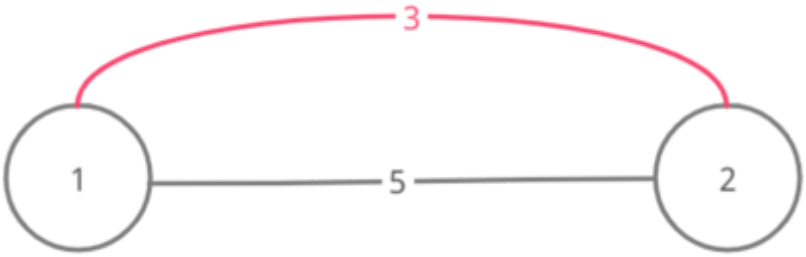
Note

Here are the graphs for the four test cases of the example (the edges of a possible MST of the graphs are marked pink):

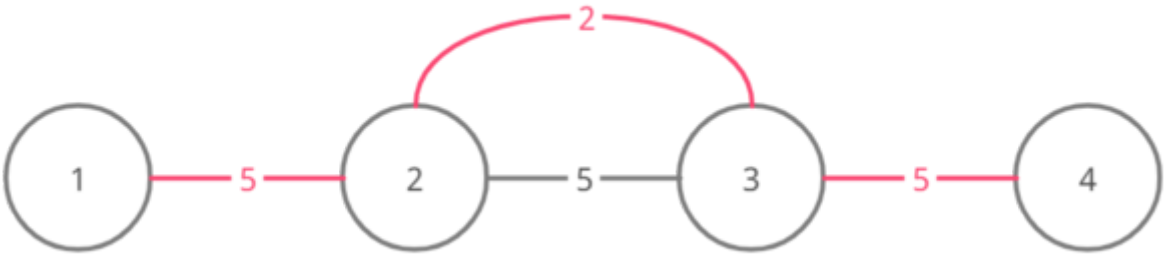
For test case 1



For test case 2



For test case 3



For test case 4