Tired

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

I'm tired of writing, I don't want to write anymore.

"This is called 'tired'."

Given a sequence $a_1, a_2 \dots a_n$ of length n, each position i has a modification cost c_i. For a position, you can pay the cost c_i to change a_i into any value. You want to minimize the total cost so that every prefix sum of the sequence is not divisible by r.

Formally, let $s_i = \sum_{j=1}^{i} a_j$. You need to make sure that for the modified sequence, for all $1 \le i \le n$, $s_i \bmod r \neq 0$.

Input

The first line contains the number of test cases T ($1 \le T \le 10^5$).

For each test case, the first line contains two positive integers n, r ($1 \le n \le 5 \cdot 10^5$, $2 \le r \le 10^9$).

The next line contains n non-negative integers a_i ($0 \le a_i < r$), representing the sequence.

The next line contains n non-negative integers c_i ($0 \le c_i \le 10^9$), representing the modification costs.

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

Output

For each test case, output one integer in a single line, representing the minimum cost.

Example

standard input	standard output
5 3 3 2 1 2 3 2 1 4 2 0 1 0 0 2 1 3 1 5 3 2 1 1 0 2 3 2 4 1 5 6 3 0 2 1 1 2 0 6 2 4 5 5 1 7 4 1 2 3 0 1 2 3 3 4 1 7 5 2 3	2 3 2 10 2