

Blips and Chitz

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

Rick is a genius scientist that can travel across the galaxy through teleportation. Rick went to his favorite place on an alien planet called “Blips and Chitz” where he can play all kinds of games that are much more fun than the ones on Earth!

There is a particular game Rick likes that makes him win Flerbos (the currency in the alien planet). The game keeps count of two values, a *score*, and a *weight*.

When Rick starts playing, his score and weight are initially 0. The game also gives Rick a positive integer m .

The game has n buttons. Rick can press one button **at most once**. The i th button is labeled with two positive integers w_i and p_i , where if Rick presses this button, his weight will increase by w_i and p_i points will be added to his score. For each button, Rick can press it or not, he decides.

When Rick decides to stop playing, he rings a bell and the game evaluates his weight and score, and if the weight is divisible by m , he will win Flerbos equal to his points.

Help Rick win the maximum number of Flerbos.

Input

The first line of input contains an integer t ($1 \leq t \leq 10^4$), the number of test cases.

The first line of each test case contains two integers n, m ($1 \leq n, m \leq 2000$), the number of bags, and the divisor of weights of our thief’s peculiar sack, respectively.

The second line of each test case contains n integers w_1, w_2, \dots, w_n ($1 \leq w_i \leq 10^9$), the labels of the buttons that add to Rick’s weight.

The second line of each test case contains n integers p_1, p_2, \dots, p_n ($1 \leq p_i \leq 10^9$), the labels of the buttons that add to Rick’s points.

The sum of $n + m$ over all test cases doesn’t exceed $2 \cdot 10^4$.

Output

For each test case output one line containing one integer, the maximum amount of Flerbos Rick can get.

Please note, that the answer for some test cases won’t fit into 32-bit integer type, so you should use at least 64-bit integer type in your programming language (like `long long` for C++).

Scoring

Group 1: (20 points)

$1 \leq n \leq 10$

Group 2: (80 points)

No additional constraints.

Example

standard input	standard output
3	10
4 10	30
4 6 13 17	0
1 2 3 4	
5 2	
1 1 1 2 2	
4 3 6 10 10	
4 100	
10 20 3 40	
10 20 3 40	

Note

In the first test case, Rick can press all buttons and obtain a weight of 40 and 10 points, and the weight is divisible by 10 (the value of m), so he rings the bell, and collects 10 Flerbos.

In the second test case, Rick can press the first, third, fourth, and fifth buttons, to obtain a weight of 6 - divisible by $m = 2$ - and 30 points. He rings the bell and collects 30 Flerbos.

In the third test case, there is no way Rick can obtain a weight that is divisible by 100, so the answer is 0.