**Fill the Giant Pool**

You’ve been tasked with filling a giant pool that requires W liters of water. To help you, you’ve hired n workers. Each worker brings a jar of water, but they operate at different rhythms.

The i-th worker can pour v\_i liters of water into the pool in one second. However, after pouring, they need t\_i seconds to refill their jar before they can pour again. That means if a worker pours at second s, their next pour will be at second s + t\_i.

Each second, all workers whose jars are ready (i.e., not refilling) will pour water simultaneously. If no worker is ready at a given second, you simply wait and skip to the next second.

Initially, all workers have full jars and are ready to pour.

Your goal is to determine how many seconds it will take to completely fill the pool. The pool is considered filled when it contains W liters or more.

**Input**

The first line contains Z (1 <= Z <= 10^4) the number of test cases.  
  
The first line of each test case contains two integers w and n (1 <= w, n <= 2 x 10^5) – the amount of water required to fill the pool and the number of workers.

The following line of each test case contains n integers v1, v2, . . . , vn (1 <= vi <= 2x10^5) - the amount of water each worker pours in one second.  
The following line of each test case contains n integers t1, t2, . . . , tn ( 1 <= ti, <= 2x10^5) – the amount of time (in seconds) each worker needs to refill their jar.

It is guaranteed that the sum of w and n over all test cases does not exceed 2x10^5  
  
**Output**  
For each test case, output an integer, the minimum number of seconds required to fill the pool.  
  
**Example**

8

3 2

2 1

2 1

5 2

2 1

2 1

50 3

5 6 7

5 6 7

50 3

2 2 2

3 3 3

90000 2

200000 200000

1 1

100000 1

1

200000

6 7

3 2 3 2 3 1 2

6 5 9 5 10 7 7

21 6

1 1 1 1 1 1

5 5 8 10 7 6

**Output**

1

3

15

25

1

19999800001

1

21

**Note**

Test case 1:

* Worker 1 and Worker 2 both pour on second 1:  
  2 + 1 = 3 liters
* Pool requirement is 3 liters → filled instantly.
* **Answer: 1 second**

Test case 2:

* **Second 1:** Worker 1 pours 2 liters, Worker 2 pours 1 liter → total 3 liters
* **Second 2:** Worker 1 is refilling, Worker 2 pours 1 liter → total 1 liter
* **Second 3:** Worker 1 pours 2 liters, Worker 2 pours 1 liter → total 3 liters
* Total poured: 3+1+3=7 liters
* Pool requirement is 5 liters → filled in 3 seconds
* **Answer: 3 seconds**

For the 6th test case: remember to use 64-bit integers as the answer can get large.