

Conquest

P57013_en

It is summer in the land of Max-Flow and Lord Push-Relabel wants to build a swimming pool in the yard next to his castle, which will cost g gold coins. So he is sending his invincible army to conquer some of the n nearby towns. His soldiers can conquer one town per day, and afterwards they will use one of the following methods to acquire gold from it:



- Taxes: the town will pay t_i gold coins every day, starting the same day it is conquered.
- Sacking: the army will get s_i gold coins by looting the town the very same day it is conquered, but this will leave the town unable to pay taxes in the future.

Lord Push-Relabel wants to minimize the number of days to acquire the desired amount of gold g . Please plan which towns to conquer, in what order, and for each conquered town whether it should be taxed or sacked.

Input

Input consists of several cases. Every case begins with g and n , followed n pairs $t_i s_i$. Assume $1 \leq g \leq 10^{17}$, $1 \leq n \leq 1000$, $1 \leq t_i \leq 10^7$, and $t_i < s_i \leq 10^{14}$.

Output

For every case, print the minimum number of days needed to collect at least g gold coins.

Sample input

```
100 1
99 100
100 1
3 99
32 2
8 17 7 14
32 2
7 14 9 17
15 3
4 6 2 7 1 2
76543210987654321 1
7654321 43210987654321
```

Sample output

```
1
34
3
2
2
10000000130
```

Problem information

Author : Félix Miravé
Generation : 2024-05-02 19:49:41