

## 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 1

```
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

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

### Problem information

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