

C . Buying Vaccines

Description

The vaccines manufacturing yield is limited, as a result, the quantity of vaccines you can purchase from each vendor is also limited. Our target is to purchase adequate (\geq quantity of required) vaccines from multiple vendors with minimum cost. Also, you need to either purchase all the vaccines the vendor can offer, or none of them (i.e. you cannot purchase only part of the vaccines from the vendor).

For the first 0.2 points, all the vendors sell the same quantity of vaccines, but with different costs. For the remaining 0.8 points, both the quantity of the vaccines and the cost varies.

Input

There is a single integer in the first line:

- **N**: number of vendors

Follow by **N** lines, each line with two integers:

- **A**: the number of vaccines the vendor can offer
- **C**: the cost of all the **A** dose

Follow by another line with a single integer:

- **T**: the number of test cases

And another **T** lines with a single integer:

- **P**: the exact total number of vaccines we want to purchase

Output

For each test case, print the minimum total cost if we want to purchase exactly or more than **P** vaccines. If the transaction is not possible, print **0**.

Sample 1 Input

(Vendors offer the same quantity of vaccines)

```
3
2 2
2 4
2 6
2
5
8
```

Sample 1 Output

```
12
0
```

Sample 1 Output Explanation

12 // 6 (2 + 2 + 2) dose

0 // Impossible to get 8 dose

Sample 2 Input

(Vendors offer various quantity of vaccines)

5

1 3

5 3

2 2

3 5

3 1

1

8

Sample 2 Output

4

Sample 2 Output

4 // (8 = 5 + 3)

Constraint

- $1 \leq N \leq 27$
- $1 \leq A \leq 100$
- $1 \leq C \leq 100$
- $1 \leq T \leq 50$
- $1 \leq P \leq 2^{32}$

Hints

The first 0.2 points are fairly easy to get, we suggest you take an attempt to solve this particular test case. There exist a generalize solution that can solve all the test case.