

## 7197 Axles

You are running a machine shop producing custom axles for radio-controlled cars. These axles can be manufactured from either steel or stainless steel, with the stainless steel parts usually priced differently from plain steel.

You have two CNC lathes: one is configured to produce stainless steel parts, and the other is configured to produce steel parts. In a given production run, a specific part design can only be assigned to one of the two machines, i.e., the same part design can be manufactured in either steel or stainless steel, but not both.

The parts are produced from solid rods of material; today your stock levels are pretty low and you only have one length of steel rod, and one length of stainless steel rod.

Part designs are selected from a library, where each part is listed according to the length of stock material required to produce it, as well as the current profit yield of the part in both steel and stainless steel versions.

You must select a subset of parts from your library, and decide how many copies of those parts to produce, as well as whether a given part should be produced in steel or stainless steel, in a way that maximises your profit given your available material stock.

### Input

Your input consists of an arbitrary number of records, but no more than 30. Each record starts with an integer  $n$ , with  $2 \leq n \leq 14$ , denoting the number of parts available in your library.

The next  $n$  lines each provides three positive integer values,

$m p s$

where  $m$  denotes the length of stock material (in millimetres) consumed when producing one of these parts,  $p$  denotes the profit made when manufacturing the part from steel (in Rands), and  $s$  denotes the profit made when manufacturing the part in stainless steel, subject to the constraints  $1 \leq m \leq 1500$  and  $1 \leq p, s \leq 1000$ .

After these  $n$  lines follows another line containing two positive integer values,

$q r$

where  $q$  denotes the length of steel stock you have available (in millimetres), and  $r$  denotes the length of stainless steel stock you have available, subject to  $1 \leq q \leq 1000$  and  $1 \leq r \leq 1200$ .

The end of input is indicated by a line containing only the value '-1'.

### Output

For each input record, output

$u$

where  $u$  denotes the maximum profit to be made with the available stock material.

### Sample Input

```
3
10 200 300
20 300 200
10 200 600
```

```
200 100
13
280 306 484
185 335 212
38 110 40
96 236 124
256 478 279
256 301 480
249 292 445
258 299 437
281 287 472
44 62 142
349 369 593
258 271 466
208 406 243
998 1123
-1
```

### Sample Output

```
10000
6410
```