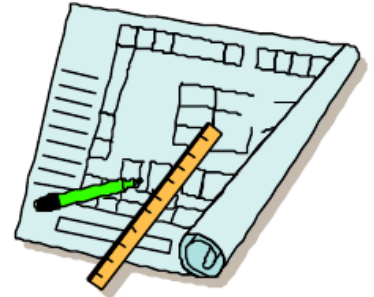


2109 The Computerized Contractor

I.M. Crooked, general contractor, is looking for an easier way to give potential customers totally useless estimates of how much it will cost to build additions onto their houses. Although the final estimates aren't related to what the additions will cost, Mr. Crooked wants the estimates to be based on a formula so he can explain to the customers how he arrives at the estimate. You've been given the formula and must implement a program to automate his estimates.

There is a fixed base cost for adding on an addition; a cost per square foot of finished floor, ceiling, or wall; a cost per square foot of door; and a cost per square foot of window. Additionally, there are maximum widths and heights for standard doors or windows. If any window or door exceeds one of those dimensions, then the cost for that particular window or door is multiplied by a given factor.



Input

Your program will accept a file which lists a set of prices, and then lists a set of potential additions. You must calculate and output the cost of each addition.

- line 1: *< base cost >*
- line 2: *< cost per finished square foot of floor/ceiling/wall >*
- line 3: *< cost per square foot of door >*
- line 4: *< max. unpenalized door width > < max. unpenalized height > < penalty multiplier >*
- line 5: *< cost per square foot of window >*
- line 6: *< max. unpenalized window width > < max. unpen. height > < penalty multiplier >*

Each addition is a single room, and its definition will begin with a line:

`room < width > < length > < height > < number of doors > < number of windows >`

Immediately following that line will be one door line for each door:

`door < width > < height >`

Following all of the door lines will be one window line for each window:

`window < width > < height >`

The next addition will begin immediately following the last line belonging to the previous room.

The file will end with:

END OF INPUT

All numbers except the number of doors and the number of windows will be floating point numbers.

Output

For each room, a single line of output will show the calculated price, rounded to the nearest penny. No dollar sign will be used.

Sample Input

```
10000
3.45
2.10
3 7 1.5
4.5
3 5 2.1
room 25 15 10 2 1
door 3 8
door 3 7
window 4 5
END OF INPUT
```

Sample Output

```
15431.95
```