COI '18 #3 Segway

There is a Segway race in the city of Dubrovnik. The race track consists of three sections, each of which is 100 meters long – therefore, the total length of the track is 300 meters. Based on the limitations of her/his Segway battery, each rider has a strategy: the speed at which he rides on the first 100 meters, the speed on the next 100 meters, and the speed on the last 100 meters, except when allowed to speed up the Segway to the maximum speed (explained in the next paragraph).

Unfortunately, the Segways are very slow, taking between 1 and 50 seconds for each meter. Therefore, the speeds in this task are given in seconds per meter (instead of meters per second).

Along the track there are several acceleration points (accelerators). When a rider reaches an accelerator, his Segway gets extra power to ride at the maximum speed of 1 second per meter for the next $X \bmod 20$ meters, where X is the number of riders strictly ahead of him at the moment he reached the accelerator (including those who have already completed the race). The rider is unable to use another accelerator before he has spent all extra power from the previous accelerator. At that moment, if there are no new accelerators, the rider continues to move at his default speed for the corresponding track section.

Assume that a rider will always use an available accelerator, even if it might not be the optimal strategy. An accelerator can be used by multiple riders, even at the same time. Your task is to write a program that simulates this race. Assuming that all Segway riders start at the same time, print the finish time for each rider in seconds.

Input Specification

The first line contains an integer N ($2 \le N \le 20\,000$), the number of riders.

The Kth of the following N lines contains three integers between 1 and 50: the default speed of the Kth rider on the first 100 meters, the next 100 meters, and the last 100 meters of the track. The next line contains an integer M ($0 \le M \le 299$), the number of acceleration points. If $M > 0$, the following line contains a strictly increasing sequence of M integers between 1 and 299: the distances of the accelerators from the beginning of the track in meters.

Output Specification

You should print N lines, where the Kth line contains the required time for the Kth rider.

Constraints

Subtask	Points	Constraints
1	15	$M = 1$
2	40	$N \le 300$
3	45	No additional constraints.

Sample Input 1

```
2
1 2 3
4 5 6
0
```

Sample Output 1

```
600
1500
```

Explanation of Sample Output 1

There are no accelerators and both riders use their default speeds.

Sample Input 2

```
3
5 5 5
6 2 10
10 9 2
2
100 199
```

Sample Output 2

```
1496
1799
2075
```

Explanation of Sample Output 2

Rider #1 does not use the first accelerator (there is nobody ahead of him), but uses the second accelerator because rider #2 overtakes him in the meantime. Overall, rider #1 rides 299 meters for 5 seconds each, and 1 meter for 1 second. Rider #2 uses the first accelerator (there is one rider ahead), but does not use the second one. Overall, he rides 100

meters for 6 seconds each, 1 meter for 1 second, 99 meters for 2 seconds each, and 100 meters for 10 seconds each. Rider #3 after each accelerator rides 2 meters at maximum speed. Overall, he rides 100 meters for 10 seconds each, 2 meters for 1 second each, 97 meters for 9 seconds each, 2 meters for 1 second each, and 99 meters for 2 seconds each.

Sample Input 3

```
5
2 2 2
6 6 6
8 8 8
9 9 9
10 10 10
2
297 298
```

Sample Output 3

```
600
1790
2386
2676
2973
```

Explanation of Sample Output 3

Of the two accelerators near the end of the track, rider #1 does not use any. Rider #2 uses both (for 1 meter) and then rides for another 1 meter at her default speed. Rider #3 uses the first accelerator (for 2 meters) and then rides for another 1 meter at her default speed. Riders #4 and #5 use extra power from the first accelerator all the way to the end of the track.