Problem C
Will The Next One Be Better?

Input File: *testdata.in*
Time Limit: 4 seconds

Problem Description

Blue Sea has the richest marine resources in the world. There are all kinds of rare fishes in the sea. It is very special. There is only one entrance for entering the waters of Blue Sea. In the sea, there are complex currents and many fishing areas. However, in order to protect the resources in the sea, some strict rules have to be obeyed for doing fishing in the sea complex. If someone wants to make some money by doing fishing in this sea, it is not an easy task.

After years of research, experts found that there is a regular distribution. A total of N fishing zones exist in the waters and each of them has M fishing areas. The entrance can connect to each fishing area in the first fishing zone. Each fishing area has M currents each of which can connect to M fishing areas in the next zone. At the end of N fishing zones, there is a big fishing area. Each fishing area of the last fishing zone has one current connecting to this big fishing area. Although the big fishing area may not contain the rarest fish there, fishermen may still go there just for a sense of accomplishment. At any fishing area, a fisherman only has two options: he can decide either to take the fish he catches in this area and leave Blue Sea, or to release the fish he catches in this area and proceed to a fishing area in the next zone. In addition, for the protection of fish resource in this sea, a fisherman can only take away one fish when he finally decides to leave the sea. There are many different kinds of fishes in each zone. But each fishing area only contains two different kinds of fishes 'a' and 'b'. These two kinds of fishes have their own probabilities of being caught in this fishing area by any fisherman, say P_a and P_b (where $P_a + P_b = 1$), and their own prices, V_a and V_b. At a specific fishing area, the expected price value of catching a fish of kind 'a' (respectively, of kind 'b') is the multiplication of P_a (respectively, P_b) and V_a (respectively, V_b). The probability distribution of each fishing area is independent from every other fishing area. Since the main goal of the fishermen is to earn as much money as possible, it may not be essential for them to reach the last big fishing area. The most important issue is to have a fishing strategy which has the maximum expected price value.

We suppose that all fishermen have been given all probability distribution data P_a, P_b and all the price data V_a, V_b in the fishing areas of Blue Sea before they start to perform fishing in the sea. A route starts from the entrance of the sea, and then a fisherman proceeds to one fishing area in the first zone. And depending on his fishing result in this fishing area, he may either decide to take the fish and leave the sea, or proceed to a fishing area in the next zone. If a fisherman decides not to leave the sea earlier, his route can pass through all the N fishing zones and reach the last big fishing area, where he has to leave the sea. A fishing strategy of a route consists of deciding whether a fisherman wants to release or take the fish he catches at each fishing area on the route, and deciding at which point he wants to leave the sea. For each fishing strategy for some route, using the probability data P_a, P_b and price data V_a, V_b at the corresponding fishing areas on the route, we can compute the expected price value for the fish a fisherman decides to take before he leaves the sea. A fisherman's goal is to find an optimal fishing strategy on some specific route among all routes starting at the entrance of the sea such that the expected price value of his fishing strategy is the maximum. We remark that the route does not necessarily end at the big fishing area and one route may have many different fishing strategies depending on at which point a fisherman decides to leave the sea.

In the following, we give an example for an illustration of our problem setting.

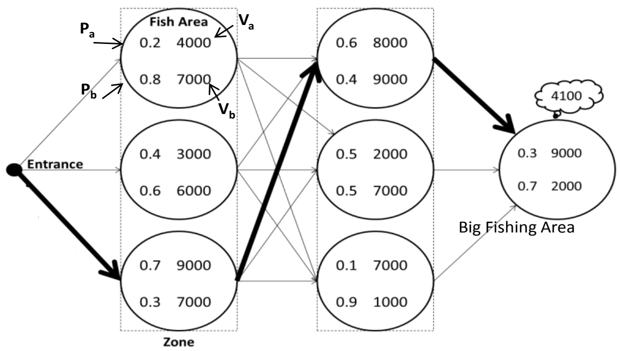

Fig. 1. N=2 M=3

Example:
In this example, we suppose that there are two zones (i.e., N=2) in Blue sea, and each of them has three fishing areas (i.e., M=3). Note that there is a big fishing area at the end of the sea complex. In total, there are seven fishing areas, and each fishing area has two different kinds of fishes.

If a fisherman follows the route with bold lines in Fig. 1 and he decides to go to the final big fishing area for his fishing strategy, we can compute the expected price value for his strategy, which is 4100 (= 1*1*0.3*9000+1*1*0.7*2000).
However, the optimal fishing strategy is actually also along this route, but with the following decision rules:

1. If he catches fish 'a' with price value 9000 at the first area, he should take the fish and leave the sea.

2. Otherwise, if he catches fish 'b' with price value 7000 at the first area, then he releases it and proceeds to fish in the next zone.

3. In the second area, no matter which kind of fish he catches, he just takes the fish and leaves the sea.

The expected price value for this strategy should then be 8820 (= 0.7*9000+0.3*0.6*8000+0.3*0.4*9000) instead. And we can check that this is in fact the optimal fishing strategy.

Technical Specifications

1. N: The number of zones, where $1 \leq N \leq 1000$.
2. M: The number of fishing areas in each zone, where $1 \leq M \leq 100$.
3. Each fishing area has two different kinds of fishes ('a' and 'b'). They are also different to the fishes in other areas.
4. P_a, P_b: The respective probabilities of catching fish 'a' and fish 'b' in a fishing area. Each of P_a and P_b has at most four decimal places after the decimal point. $0 \leq P_a, P_b \leq 1$ and $P_a + P_b = 1$.
5. V_a, V_b: The respective prices of fish 'a' and fish 'b' in a fishing area. $1000 \leq V_a, V_b \leq 100000$. V_a, V_b are integers.

Input Format

The input starts with an integer representing the number of test cases. The first line of each test case includes two numbers N and M. Next there will be N lines in each test case. The ith line of these N lines includes M sets of values P_a, V_a, P_b, V_b for the ith fishing zone, where each set of values is for a fishing area. These values are separated by blank spaces. Finally there is one more line containing four values P_a, V_a, P_b, and V_b for the big fishing area at the end of the sea.

Output Format

Output the integral part of the maximum expected price value for each test case in a line. (Note : the fractional part of the maximum expected price value is discarded without rounding-up. For example, if the maximum expected price value is 93.65, you should simply print out 93.)

Sample Input

```
2
2 3
0.2 4000 0.8 7000 0.4 3000 0.6 6000 0.7 9000 0.3 7000
0.6 8000 0.4 9000 0.5 2000 0.5 7000 0.1 7000 0.9 1000
0.3 9000 0.7 2000
```

```
3 2
0.2 4112 0.8 7008 0.7 9900 0.3 7008
0.6 8301 0.4 9000 0.1 7007 0.9 1017
0.4 3160 0.6 6012 0.5 2000 0.5 7000
0.3 6041 0.7 8051
```

Sample Output

```
8820
9504
```