G: Agentic Development

Time Limit: 1 second

You would like to develop a system on your computer, and you've heard that you can use an AI agent to do the work for you as long as you can break the system down into manageable tasks. Developing the system requires the successful completion of n tasks, which can be undertaken in any order, but only one at a time. For each task, you know how long the agent will take to attempt it. At the end of each attempt, exactly one of three things happens:

1. The agent successfully completes the task.
2. The agent fails to complete the task, but no harm is done.
3. The agent irreversibly corrupts your system. You immediately wipe the system clean and start over with no completed tasks.

For each task, you know the probability of success, failure, and corruption. Each attempt is independent of every other attempt. Wiping the system clean takes no time. You choose which task the agent attempts each time, and you would like to minimize the expected time taken. What is the expected time to complete all tasks and develop the system, assuming you direct the agent optimally?

Input

The first line of input contains a single integer T ($1 \leq T \leq 100$), representing the number of test cases.

The descriptions of T test cases follow. Each test case starts with a line containing a single integer n ($1 \leq n \leq 100$), the number of tasks needed to develop the system.

The next n lines each describe one task. Each line contains four integers, t, s, f, and c ($1 \leq t \leq 1000, 0 \leq s, f, c \leq 100$), indicating that each attempt at the task takes time t, and that the attempt succeeds with probability $\frac{s}{s+f+c}$, fails with probability $\frac{f}{s+f+c}$, and corrupts the system with probability $\frac{c}{s+f+c}$.

For each task, at least one of s, f, and c will be positive.

Output

For each test case, output the minimum expected time for the agent to complete all tasks and develop the system. Your answer will be considered correct if it has relative error at most 10^{-6}.

If it is impossible for the agent to complete all tasks, output `impossible`.

Sample Input 1	Sample Output 1
3 2 1 2 3 4 5 6 7 8 2 4 3 2 1 8 7 6 5 1 67 0 67 67	28 34.285714285714 impossible