

Probe

There are N space civilizations in this galaxy. No pair of civilizations have met each other. One day, the civilizations all decided to send one exploration ship each. For convenience, let's consider the galaxy to be the 2-dimensional plane. One civilization will send one exploration ship from a designated location in the plane. The velocity of a ship is given by the pair (dx, dy) , meaning that, if the ship is located at (X, Y) now, the ship will be at $(X + dx, Y + dy)$ one year later.

Every ship starts simultaneously and every ship leaves a probe at the location of the ship every year (including the starting location). The process goes on for M years. That is, there will be $M + 1$ probes left by one ship. Notice that M may equal 0. The total number of probes left in the whole galaxy will be $N(M + 1)$.

After M years pass and all the process has finished, each probe will send some radio wave to its surrounding space and look for probes from other civilization. If a probe is located at (P, Q) , this probe can detect the presence of a probe from *other civilization* if the probe is located at location (P', Q') s.t., $\max(|P' - P|, |Q' - Q|) \leq 2$ holds. A probe will send home one capsule each for the probes that it detects. Multiple (the same number as detected) probes are sent if multiple probes from one civilization is detected.

Write a program, given the initial locations and the velocities of the exploration ships, that computes the number of capsules that will be generated.

[Input]

In the first line of the input file is given the number of test cases T . ($T \leq 100$) The first line of each test case contains N , which is the number of civilizations and M , which is the number of years the exploration proceeds. In each of the next N lines the information for one exploration ship is given. First two integers are the x - and y -coordinate values of the initial location of the ship. The next two integers are the dx and dy values for the ship. No space ship is stationary. No two spaceship will start at the same location. It is guaranteed that the absolute value of coordinate values for any location of any ship is at most 100,000,000.

The input is given in 3 sets as follows:

- Set 1: N is at most 100 and M is at most 500.
- Set 2: N is at most 500 and M is at most 100,000. No two ships move in parallel directions.
- Set 3: N is at most 500 and M is at most 100,000.

[Output]

For each test case, print the number of capsules that will be generated.

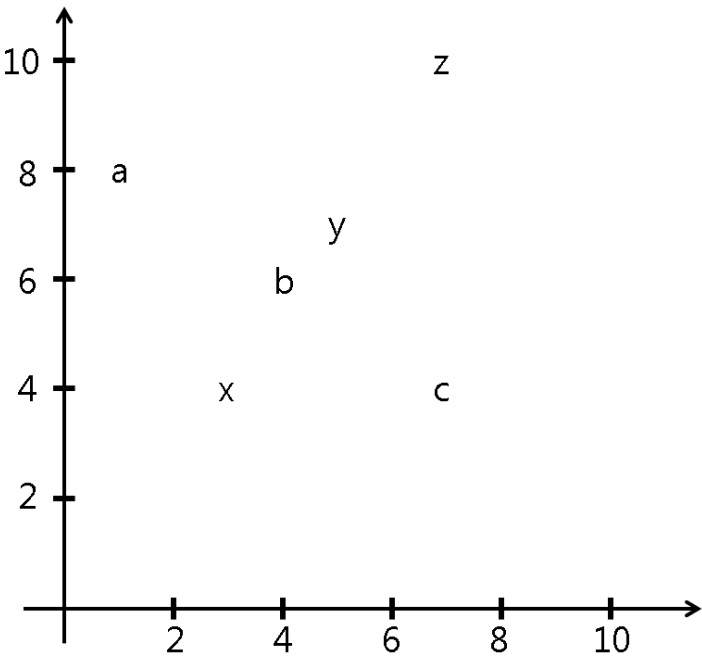
[Input/Output Example]

Input

2
2 2
3 4 2 3
1 8 3 -2
5 0
1 2 3 4
4 6 1 2
5 3 6 8
6 2 4 3
7 7 8 9

Output

4
2



The above figure shows the situation for the first test case in the example. The 3 probes a, b, and c are left by the ship from the first civilization and the 3 probes x, y, and z are left by the

ship from the second civilization. The pairs (b, x) and (b, y) are close enough. Thus, 4 capsules will be generated in all.