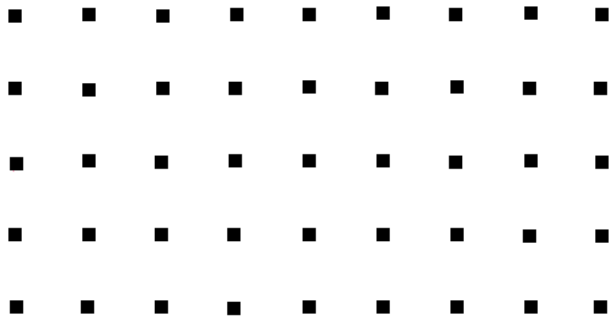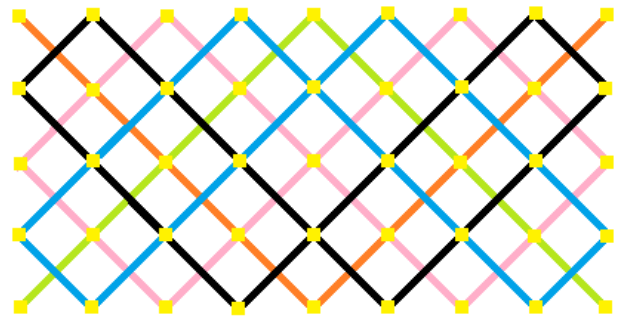# Laser Beam

5 × 9 grid without laser beam

5 × 9 grid with laser beam

Jolly Kingdom is threatened by the arrival of an evil witch. In order to protect the kingdom, the king wants to install some powerful laser beams to cover some parts of the kingdom. The part that needs to be protected has size of N × M. To complete this installation, he hired you, as the best engineer he can find.

Imagine a grid of size N × M, you can choose one node in the grid and shot a laser beam, the laser can be shot only in diagonal direction as shown in the picture above, if the laser reach the edge of the grid, it'll bounce to other diagonal direction, and if the laser reach the corner of the grid, it'll bounce back. The laser will form a loop track. In order to install the best security laser beam for the king, you have to compute the number of different laser track.

Input

First line consists of an integer T ($1 \leq T \leq 10^4$) – the number of test cases. Each of next T lines consists an 2 integers N and M ($2 \leq N, M \leq 10^9$) – the size of the grid.

Output

For each test case, output an integer – the number of different laser track on that grid.
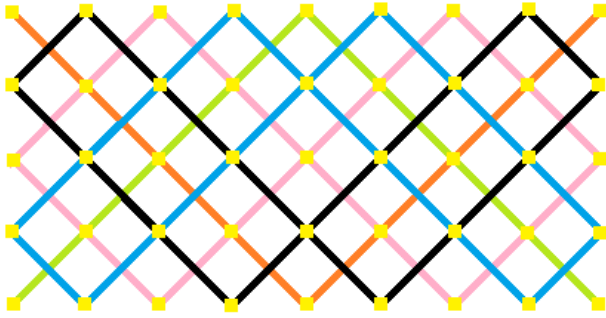
Example

Input:
9
2 2
2 3
3 3
3 5
4 4
5 5
5 9
5 123456789
123456789 5

Output:
2
2

3
3
4
5
5
5
5

Explanation

There are 5 different laser tracks on 5 × 9 grid, shown in the picture above as black line, blue line, pink line, orange line, and green line.