Problem K. Token Game

Input file:	*standard input*
Output file:	*standard output*
Time limit:	6 seconds
Memory limit:	1024 mebibytes

Alice and Bob are playing a game on board which is a 2-dimensional 300×300 grid. The board is subdivided into cells. Each cell can be uniquely identified by two integers representing (x, y) coordinates, each in the range from 1 to 300.

Two tokens are on the board on distinct cells. Alice starts the game. On each player's turn, that player chooses one of the tokens, chooses one of the coordinates of the cell it's on, and reduces that coordinate by some positive amount. The moved token cannot jump over or occupy the same space as the other token. The token must also remain on the board (so both of its coordinates need to stay positive). The first player unable to make a move loses. Note that both players can move either token.

You are given the starting configuration of a number of games. For each of the games, compute the number of initial winning moves available to Alice.

Input

The first line of input contains a single integer n ($1 \le n \le 10^5$), which is the number of games to analyze.

Each of the next n lines contains four integers x_1, y_1, x_2 and y_2 ($1 \le x_1, x_2, y_1, y_2 \le 300$, and either $x_1 \ne x_2$ or $y_1 \ne y_2$ holds). This represents the starting configuration of one game, with the tokens at cells (x_1, y_1) and (x_2, y_2).

Output

Output n lines. On each line, output a single integer, which is the number of initial winning moves available to Alice for one of the input games. Output them in the order of the input.

Example

standard input	standard output
5 6 6 6 3 6 6 2 2 1 6 3 1 3 6 1 3 6 3 1 5	3 0 1 1 0