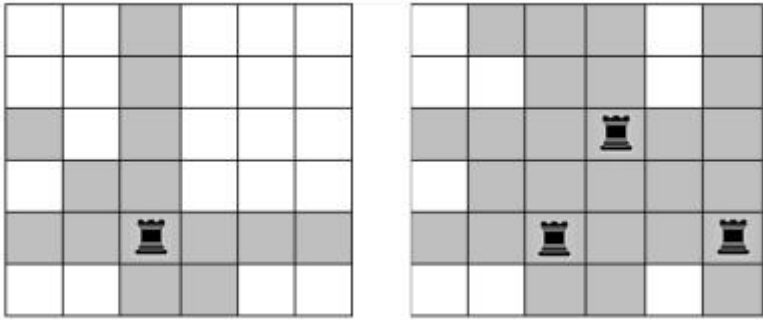


12633 Super Rooks on a Chessboard

Let's assume there is a new chess piece named Super-rook. When placed at a cell of a chessboard, it attacks all the cells that belong to the **same row** or **same column**. Additionally it attacks all the cells of **the diagonal** that goes from **top-left** to **bottom-right** direction through that cell.

N Super-rooks are placed on a $R \times C$ chessboard. The rows are numbered 1 to R from top to bottom and columns are numbered 1 to C from left to right of the chessboard. You have to find the number of cells of the chessboard which are **not attacked** by any of the Super-rooks.

The picture on the left shows the attacked cells when a Super-rook is placed at cell (5, 3) of a 6×6 chessboard. And the picture on the right shows the attacked cells when three Super-rooks are placed at cells (3, 4), (5, 3) and (5, 6). These pictures (Left and right one) corresponds to the first and second sample input respectively.



Input

First line of input contains an integer T ($1 \leq T \leq 20$) which is the number of test cases. The first line of each test case contains three integers R , C and N ($1 \leq R, C, N \leq 50,000$). The next N lines contain two integers r , c giving the row and column of a Super-rook on the chessboard ($1 \leq r \leq R$ and $1 \leq c \leq C$). You may assume that two Super-rooks won't be placed on the same cell.

Output

For each test case, output the case number followed by the number of cells which are **not attacked** by any of the Super-rook.

Sample Input

```
2
6 6 1
5 3
6 6 3
3 4
5 3
5 6
```

Sample Output

Case 1: 22

Case 2: 9