

Knight Move

Daniel is a chess player. At his free time, he usually plays chess with his family or his friends. But, sometimes they have their own activities, so Daniel can't play chess. He spends his time to learn about knight's move. He has 1,000 x 1,000 chessboard, numbered from 1 to 1,000. He wants to move his knight from (a,b) to (1,1) with minimum movement. Help Daniel to solve it.

Input

The input file consists of several lines.

The first line contains a single number t representing the number of question Daniel asked. [$1 \leq t \leq 1,000$]

The next t lines contains a and b representing knight's position on the chessboard. [$1 \leq a, b \leq 1,000$]

Output

The output file should contains t lines.

The i -th line should contain one number – the minimum number of knight's movement.

Example

Input:

```
2
3 5
7 4
```

Output:

```
2
3
```