

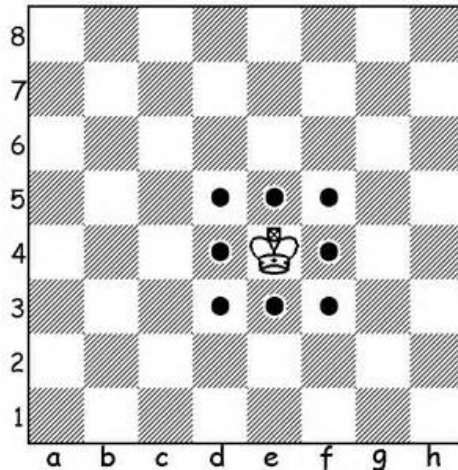


Incomplete Chessboard

Input: Standard Input
Output: Standard Output



In chess, King is the most important piece. It can move left, right, up, down or diagonally, but only one square at a time, shown below.



Given two squares $A(r_1, c_1)$, $B(r_2, c_2)$, your task is to calculate the number of moves needed to move a king from A to B. To make the problem (slightly) harder, one square $C(r_3, c_3)$ is removed from the chessboard, that means the king should never go into square C during his trip. In this problem, rows are numbered 1~8 from bottom to top, and columns are numbered 1~8 from left to right.

Input

There will be at most 10000 test cases. Each case contains 6 integers $r_1, c_1, r_2, c_2, r_3, c_3$ ($1 \leq r_1, c_1, r_2, c_2, r_3, c_3 \leq 8$). Three squares A, B, C are always distinct.

Output

For each test case, print the case number and the minimum number of moves needed.

Sample Input

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1 1 8 7 5 6
1 1 3 3 2 2
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Output for Sample Input

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Case 1: 7
Case 2: 3
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