1197. Lonesome Knight

Time limit: 1.0 second
Memory limit: 64 MB

The statement of this problem is very simple: you are to determine how many squares of the chessboard can be attacked by a knight standing alone on the board. Recall that a knight moves two squares forward (horizontally or vertically in any direction) and then one square sideways (perpedicularly to the first direction).

Input

The first line contains the number N of test cases, $1 \le N \le 100$. Each of the following N lines contains a test: two characters. The first character is a lowercase English letter from 'a' to 'h' and the second character is an integer from 1 to 8; they specify the rank and file of the square at which the knight is standing.

Output

Output N lines. Each line should contain the number of the squares of the chessboard that are under attack by the knight.

Sample

input	output
3 a1 d4 g6	2 8 6

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