

Problem D. Endgame

Input file: *standard input*
Output file: *standard output*
Time limit: 5 seconds
Memory limit: 512 mebibytes

The game of chess is almost finished. On the chessboard, apart from White and Black kings, there is only a White rook.

You are playing White, and it is your move. Determine the minimal number of moves you need to give a checkmate, provided that your opponent plays optimally and delays his inevitable defeat for as long as possible.

There is a compilation of chess rules at the end of this statement. If you already know them, rest assured: your puny chess skills will not help you solve this problem.

Input

The first line of input contains the number of test cases z ($1 \leq z \leq 10$). The descriptions of the test cases follow.

Each test case is given on eight lines describing a chessboard. Each of these lines describes a single row and contains exactly eight characters: ‘.’ denotes an empty field, ‘W’ is the White king, ‘B’ is the Black king, and ‘R’ is the White rook. There is exactly one piece of each kind. The starting position is guaranteed to be valid: in particular, kings are not adjacent to each other, and the Black king is not under attack.

There is an empty line after each test case.

Output

For each test case, output a line containing a single integer: the maximal possible number of moves White needs to give a checkmate (per common tradition, count only your moves, not Black's).

Example

standard input	standard output
2	1
.....	2
.....	
.....	
.....	
.....	
.....W	
R.....	
.....B	
.....	
....B...	
.....	
..W.....	
.....	
.....R..	
.....	
.....	
.....	

Note

Chess rules:

- The players alternately move one piece per turn.
- A player cannot “pass”; on each turn, they have to make a legal move.
- The king moves one square in any direction (horizontally, vertically, or diagonally).
- The rook can move any number of squares along any row or column, but may not leap over other pieces.
- A king is *under attack* if it is within move range of an opposing piece.
- A player may not make any move that would put or leave his or her king under attack (in particular, the king cannot be moved to a square adjacent to other king).
- A Black king can, however, move to a square occupied by the White rook, if the White king is not adjacent to the rook. The rook is then captured and the game ends in a draw.
- If Black player has no legal move, the game is over; it is either a checkmate (White wins) if the Black king is under attack, or a stalemate (a draw) if it is not.
- It is known that, in the situation described above (king and rook vs. king), a checkmate is always possible in less than 50 moves.