

# Knights

---

## Description

On a 5\*5 chessboard, there are 12 black knights, 12 white knights, and an empty square. At any time, any knight can follow the knight's move method (move to the grid where the horizontal coordinate differs by 1 and the vertical coordinate differs by 2, or where the vertical coordinate differs by 2 and the horizontal coordinate differs by 1) to move to the empty space.

Give an initial chessboard, please find the least number of steps to reach the target state:



## Input Format

The first line contains an integer  $T$ , totally  $T$  test cases.

Then there are  $T$  5\*5 matrices, **0** represents for white knight, **1** represents for black knight,

and **\*** represents for the empty space. There's no blank line between two case of data.

## Output Format

For each test case, output one integer. If it is possible to reach the target state within 15 steps (including 15 steps), output the number of steps. Otherwise, output -1.

## Sample

### Sample Input

```
2
10110
01*11
10111
01001
00000
01011
110*1
01110
01010
00100
```

### Sample Output

```
7
-1
```