

# Ways to give a check



Chess is a very popular game played by worldwide by hundreds of millions of people. Nowadays, we have very sophisticated chess engines such as [Stockfish](#) and [Komodo](#) to help us analyze games. These engines are very powerful pieces of well-developed software that use intelligent ideas and algorithms to analyze positions and sequences of moves, as well as to find tactical ideas. In this problem, the task is to implement a very simple component that can be used in a chess engine.

For a given chess position, knowing that it is White's move, and White can promote exactly one pawn in a single move, find out the number of different pieces he can promote the Pawn to in order to give a check to Black's King (moves resulting in a Checkmate also counts, since they also give a check). For clarity, White promotes the Pawn by moving it from the 7-th to the 8-th rank along the same file (column). There are 4 possible different promotions: the pawn can be promoted either to a Queen, or to a Rook, or to a Bishop, or to a Knight.

For simplicity, in this problem, we only consider promotion by moving the Pawn from the 7-th to the 8-rank along the same file. You should assume that there is no position on the board in which the Pawn can be moved to the 8-rank by capturing the Black's piece (a diagonal move).

Moreover, White can have more than one Pawn in the 7-th rank, but there will be exactly one that can be promoted with a single valid move. In other words, there might be more White's Pawns in the 7-th rank, but only one can make a valid move along its file to the 8-rank.

## Input Format

In the first line, there is a single integer  $t$  denoting the number of scenarios to handle. After that, descriptions of subsequent scenarios are given.

Each scenario consists of 8 lines, with 8 characters each. The first line denotes the 8-th rank (row) on the board, while the last line denotes the 1-st rank. Empty cells on the board are denoted by "#", while pieces are denoted by characters  $\{K, Q, N, B, R, P\}$  for White's pieces and  $k, q, n, b, r, p$  for Black's pieces, where  $K/k$  is the King,  $Q/q$  is a Queen,  $N/n$  is a Knight,  $B/b$  is a Bishop,  $R/r$  is a Rook, and  $P/p$  is a Pawn).

## Constraints

- $1 \leq t \leq 5$
- There are at most 4 pieces of each color on the board
- Each player has exactly one King and the given position on the board is a valid chess position assuming that it's White's move
- It is guaranteed that White has exactly one Pawn in the 7th rank that can be promoted in a single move

## Output Format

Print exactly  $t$  lines. In the  $i$ -th of them, print a single integer denoting the answer to the  $i$ -th scenario, i.e. the number of ways to promote the pawn resulting in a check in this scenario.

## Sample Input 0

```
2
#####
#k#P####
#####
#####
#####
#####
#K#####
```

```

#####
#####
#####P#
#####k###
#####
#####
#####
#####K###
#####

```

## Sample Output 0

```

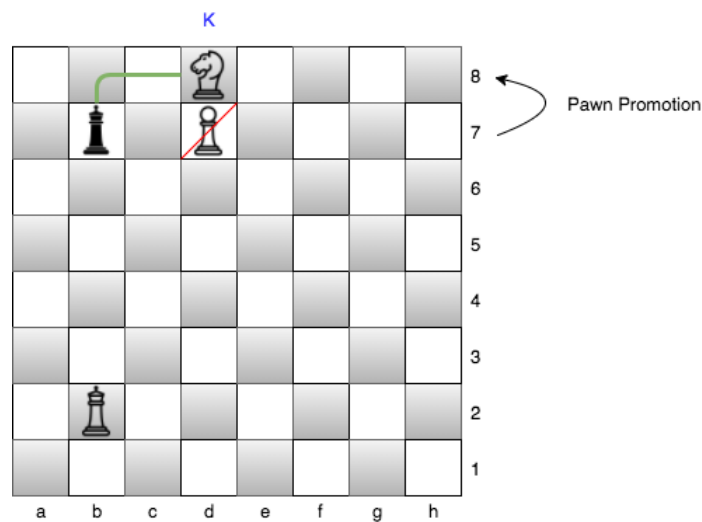
1
2

```

## Explanation 0

In the sample input, there are two cases to solve.

In the first of them, if White promotes the Pawn to a Knight, he gives a check to the Black King. Any other promotion, i.e. to neither a Queen nor to a Rook nor to a Bishop doesn't result in a check.



In the second case, if White can promote either to a Queen or to a Bishop in order to give a check to the Black King across a diagonal.

