

Knightmare

Time Limit: 1.0s **Memory Limit:** 64M

KODTÜ6 Question A Knightmare

Execution time limit is 1 seconds.

Runtime memory usage limit is 64 megabytes.

A knight and a pawn stand on a 8x8 chess board. Their positions on the board are given. The __pawn's position is fixed__ throughout the whole game.

Your task is to find the minimum number of moves the knight has to make in order to capture the pawn. If it is impossible for the knight to capture the pawn, output -1. If the given test case has the pawn and the knight on the same position, output 0.

Input

First line contains a string, the position of the knight. Second line contains a string, the position of the pawn.

Output

Print the minimum number of moves that has to be done by the knight in order to capture the pawn.

Examples

Input 1:

```
d3  
g7
```

Output 1:

```
3
```

Input 2:

h1
a6

Output 2:

4

Explanation

Input 1

The shortest path of the knight is as follows - c5 e6 g7x

Input 2

The shortest path of the knight is - g3 e4 c5 a6x