

Laser Phones

[English](#)

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The cows have a new laser-based system so they can have casual conversations while out in the pasture which is modelled as a $W \times H$ grid of points ($1 \leq W \leq 100$; $1 \leq H \leq 100$).

The system requires a sort of line-of-sight connectivity in order to sustain communication. The pasture, of course, has rocks and trees that disrupt the communication but the cows have purchased diagonal mirrors ('/' and '\ below) that deflect the laser beam through a 90 degree turn. Below is a map that illustrates the problem.

H is 8 and W is 7 for this map. The two communicating cows are notated as 'C's; rocks and other blocking elements are notated as '*':

```
7..... 7.....
6.....C 6...../-C
5.....* 5.....|*
4*****. 4*****|*
3.....* 3.....*|.
2.....* 2.....*|.
1.C..*.. 1.C..*|.
0..... 0.\-----/.
 0 1 2 3 4 5 6    0 1 2 3 4 5 6
```

Determine the minimum number of mirrors M that must be installed to maintain laser communication between the two cows, a feat which is always possible in the given test data.

Input

- Line 1: Two space separated integers: W and H.
- Lines 2..H+1: The entire pasture.

Output

- Line 1: A single integer: M.

Example

Input:

```
7 8
.....
.....C
.....*
*****.
.....*
.....*
.....*
.C..*..
.....
```

Output:

```
3
```

Any suggested test case will be welcomed.