Problem J5: Harvest Waterloo

Problem Description

There is a wildly popular new harvest simulation game called *Harvest Waterloo*. The game is played on a rectangular pumpkin patch which contains bales of hay and pumpkins of different sizes. To begin the game, a farmer is placed at the location of a pumpkin.

The farmer harvests all pumpkins they can reach by moving left, right, up, and down throughout the patch. The farmer cannot move diagonally. The farmer can also not move through a bale of hay nor move outside of the patch.

Your job is to determine the total value of all the pumpkins harvested by the farmer. A small pumpkin is worth \$1, a medium pumpkin is worth \$5, and a large pumpkin is worth \$10 dollars.

Input Specification

The first line of input is an integer $R > 0$ which is the number of rows within the patch.

The second line of input is an integer $C > 0$ which is the number of columns within the patch.

The next R lines describe the patch. Each line will contain C characters and each character will either represent a pumpkin size or a bale of hay: `S` for a small pumpkin, `M` for a medium pumpkin, `L` for a large pumpkin, or `*` for a bale of hay.

The next line of input is an integer A where $0 \leq A < R$, and the last line of input is an integer B where $0 \leq B < C$. Row A and column B is the starting location of the farmer and the top-left corner of the patch is row 0 and column 0.

The following table shows how the available 15 marks are distributed:

Marks	Description	Bound
1	The patch is small and there are no bales of hay.	$R \times C \leq 100$
4	The patch is small and the bales of hay divide the entire patch into rectangular areas.	$R \times C \leq 100$
5	The patch is small and the bales of hay can be anywhere.	$R \times C \leq 100$
5	The patch is large and the bales of hay can be anywhere.	$R \times C \leq 100\,000$

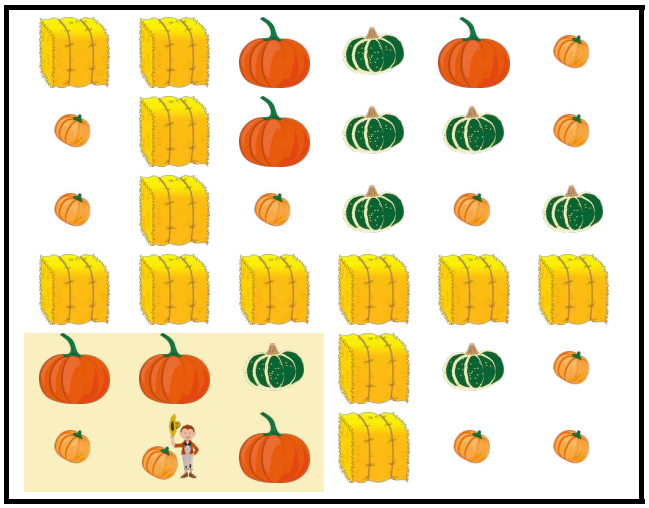
Output Specification

Output the integer, V, which is the total value in dollars of all the pumpkins harvested by the farmer.

La version française figure à la suite de la version anglaise.

Sample Input 1

```
6
6
**LMLS
S*LMMS
S*SMSM
******
LLM*MS
SSL*SS
5
1
```



Output for Sample Input 1

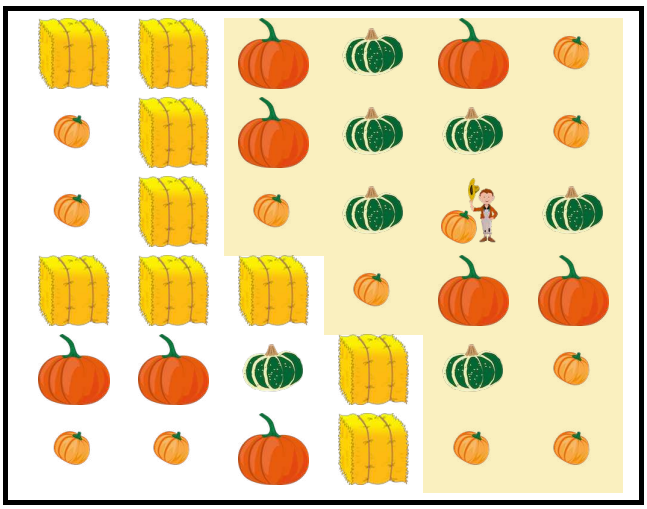
```
37
```

Explanation of Output for Sample Input 1

Starting at row 5 and column 1, the farmer can reach the 6 pumpkins in the highlighted area. They harvest 2 small pumpkins, 1 medium pumpkin, and 3 large pumpkins. The total value in dollars of this harvest is $2 \times 1 + 1 \times 5 + 3 \times 10 = 37$.

Sample Input 2

```
6
6
**LMLS
S*LMMS
S*SMSM
***SLL
LLM*MS
SSL*SS
2
4
```



Output for Sample Input 2

```
88
```

Explanation of Output for Sample Input 2

Starting at row 2 and column 4, the farmer can reach the 19 pumpkins in the highlighted area. They harvest 8 small pumpkins, 6 medium pumpkin, and 5 large pumpkins. The total value in dollars of this harvest is $8 \times 1 + 6 \times 5 + 5 \times 10 = 88$.

La version française figure à la suite de la version anglaise.