Manhattan Distance

The Manhattan distance refers to the distance that would be travelled to get from one point to the other if a grid-like path is followed (vertical and horizontal only, no diagonals). The Manhattan distance between two points is the sum of the absolute differences of their corresponding coordinates.

For example, given a **4x5** grid composed of sharp **(#)** signs and two points of concern denoted by ampersand **(&)** signs.

```
# # # # &
# # # # #
# # # # #
& # # # #
```

Calculating the Manhattan Distance between the two ampersand signs would go like this (indexes are added as reference).

```
  0 1 2 3 4
0 # # # # &
1 # # # # #
2 # # # # #
3 & # # # #
```

coordinates of first ampersand (top right) → **x1 = 0, y1 = 4**
coordinates of second ampersand (bottom left) → **x2 = 3, y2 = 0**
therefore **|(0-3)| + |(4-0)| -> 3 + 4 = 7**

Tracing the Manhattan path shows that the Manhattan distance indeed is 7 units, see overlay path composed of dots below.

```
# # # . .
# . . . #
. . # # #
& # # # #
```

from the ampersand at the lower left to the ampersand at the top right
first move → up
second move → right
third move → up
fourth move → right
fifth move → right

sixth move → up
seventh move → right (partner ampersand reached)
distance therefore is seven (7)

Given a grid of sharp symbols be able to calculate the Manhattan distance between two ampersands located within the grid.

Input Format (input: manhattan.in)
Input contains grids of sharp symbols with an empty line separating the grids from one another.

Output Format (output: standard output)
Display the Manhattan distance between two ampersands located within every grid.

Sample Input

```
# # # # # # # # # &
# # # # # # # # # #
# # # # # # # # # #
# # # # # # # # # #
# # & # # # # # # #
# # # # # # # # # #
# # # # # # # # # #

& # # # # # # # #
# # # # # # # # #
# # # # # # # # #
# # # # # # # # #
# # & # # # # # #
# # # # # # # # #

& # # #
# # # #
# # # #
# # # #
# # # #
# # & #
```

Sample Output

```
11
6
7
```