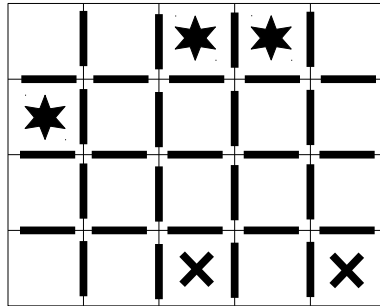


# Lighting Units

*Time limit: 1 second*

A new vegetable production factory has been built. The factory is  $M$  units wide and  $N$  units long. It is divided into  $1 \times 1$ -unit room; thus, there are  $MN$  rooms in the factory. Every wall inside the factory between two rooms is a glass wall so that light can go through it. Vegetables are grown vertically on each wall inside the factory. No vegetables are grown on the walls at the border of the factory. See figure below for an example of a factory with  $M=4$  and  $N=5$ .



**Figure 1.** Thick walls are where vegetables grow. Rooms with stars are those that lighting units must definitely be installed. Rooms with X are those that lighting units must not be installed.

The factory has internal all-day lighting. Two rooms are adjacent if they share a wall. Since each wall is made of glass, vegetables on the wall can obtain energy from either rooms sharing this wall. While 100% lighting is needed, the factory is not required to install lighting units in every room.

Due to some other design criteria, lighting unit must be installed in some room, and they cannot be installed in some room. Your task is to write a program to find the minimum number of rooms to install the lighting units so that vegetables on every wall receive the light. It is guaranteed that there exists a way to install lighting units such that vegetables on every wall receive the light.

## Input

The first line contains an integer  $T$ , the number of test cases ( $1 \leq T \leq 20$ ). After that,  $T$  test cases in the format described below follow.

The first line of each test case has two integers  $M$  and  $N$  ( $1 \leq M \leq 30$ ;  $1 \leq N \leq 30$ ).

The next  $M$  lines describe the factory floor plan. Line  $I$ , for  $1 \leq I \leq M$ , describing the  $I$ -th row, contains a string with  $N$  characters of '.', '\*', and 'x'. The  $J$ -th character, for  $1 \leq J \leq N$ , specifies the  $J$ -th room on the  $I$ -th row. The character is '\*' if it is required that a lighting unit be installed in that room, it is 'x' if a lighting unit **cannot** be installed in that room, and it is '.' if you can choose if you want to install a lighting unit in that room.

## Output

For each test case, your program should output the minimum number of rooms to install the lighting unit. This number should include rooms where lighting units must be installed as well (i.e., those marked with '\*' in the input).

### Examples

Input	Output
<pre> 5 4 5 ..** *.... ..... ..x.x 1 5 *.... 1 5 .*... 1 5 .....x 2 5 ..... ..... </pre>	<pre> 12 3 2 2 5 </pre>

### Remarks

The following figure shows how to install 12 lighting units in the first sample test case. While there are other ways to do that, this is the minimum number of lighting units.

