Problem H - The Mandalorian

Time limit: 5 seconds

Lucca thought The Mandalorian was incredibly ok. Perfectly average. For fun, he designed a game using the same characters. In the game, you control Mando, and you're looking for Baby Yoda's favourite food: Tacos (there is no evidence of tacos being his favourite food, but there is also no evidence of the opposite).

Your character, Mando, is in a dungeon that can be represented as a rectangular grid of cells. Some cells are walls, some cells contain a taco, and some cells are empty. The game is simple (Lucca's game designing skills are worse than his movie-making ones), so your character can only move in vertically or horizontally, not diagonally.

Your objective in the game is to acquire as many tacos as possible by reaching the cells that contain them. Since some tacos will be blocked by walls, it may not be possible to get all of them. To help you in your quest, you are equipped with a jetpack with enough fuel for a **single** jump. This allows Mando to jump onto a wall that is beside him, and fall in either of the three other sides of it (as long as it is not blocked by another wall).

Baby Yoda is too cute to starve, so you have to find out what is the maximum number of tacos that Mando can reach from his initial position. The position in which Mando stays at the end of the game is not important.

Input

The first line contains an integer T, denoting the number of test cases.

Each test case begins with a single line containing two integers N and M, ($1 \leq N, M \leq 2000$), denoting the number of rows and columns in the grid respectively. Then, the description of the dungeon are in the following N lines of M characters each.

Each character in the grid represents a cell, which is one of the following types:

- "S": Your starting cell

- "T": A cell with a taco

- "#": A cell with a wall

- ".": An empty cell

Exactly one cell of the grid has the character "S"

Output

For each test case, output in a single line, the maximum number of tacos you can acquire.

Sample Input

```
2
4 5
S..#.
.TT#.
###T.
.TT#.
4 2
.S
TT
##
T#
```

Sample Output

```
4
3
```