

Problem F- City Slickers

In the movie City Slickers, Mitch, Ed and Phil had to migrate a herd of cattle between two ranches across the Montana Desert. In the open, they took no time at all, but to cross a mountain was perilous, and took 1 full day.



What's the fastest way for them to navigate the herd through the mountains?

Input Specification:

The first line of input will contain a single integer n . n test cases will follow.

Each test case will begin with 2 integers r , c , each at least 2, but not more than 40. r rows of text will follow, each of size c characters. This text will represent the map.

The map will contain exactly two 'r's, representing the ranches. A '.' is an empty area; anything else is a mountain.

Output Specification:

You will output the minimum number of days it will take the trio to complete their cattle run. Squares are adjacent only in the four compass directions (North, South, East and West), and the herd may never leave the map.

Sample Input:

```
2
2 3
rw.
wxr
5 5
...n.
.rmnx
xxvn.
xkzr.
.y...
```

Sample Output:

```
1
2
```