8. Room for Improvement

Program Name: Room.java   **Input File: room.dat**

You would like to replace the ratty carpet in your room. As you've been working part-time at a major home-improvement chain, you can purchase new carpet for $1 per square foot. Now all you have to do is calculate the size of your room.

You will be given a map of your house with # signs indicating the walls and an @ sign indicating the spot where you are standing. The 'room' to be carpeted is all the area that you can access without moving through a wall, and you are guaranteed that the room will always be completely enclosed by walls (i.e., your room is not outside).

You are to write a program to determine the cost to purchase the new carpet.

Input
- The first line will contain a single integer n that indicates the number of data sets in the input.
- Each data set will consist of:
  - a line containing two integers r and c (each between 1 and 50, inclusive), indicating the number of rows and columns in this house map.
  - r lines, each containing c characters, making up the map.
  - Each character will be one of:
    - # - a wall
    - . (period) – empty space representing 1 square foot of floor area
    - @ - you (standing in an empty space in your room)

Output
For each data set in the input, output a single line indicating the number of dollars you must spend to buy the carpet for your room assuming that there is no waste (i.e., you are able to buy exactly the right amount of carpet in the right shape to fit your room at the given unit cost per square foot).

Example Input File
```
2
5 5
#####
#...#
#.@.#
#...#
#####
7 19
###################
#................#
#.###############
#...##.........#..
#.@.#.##########..
#...##...........
####.............
```

Example Output to Screen
```
$9
$27
```