COUNTING SHAPES PROBLEM

An input file contains a rectangular arrangement of dots and X's. The X's form shapes that are separated by space. The dots (periods) represent empty space which separate one shape from another. It is your task to count the number of shapes in the rectangle.

For the purpose of defining a shape, please note that any given X belongs to the same shape as any other X that is its neighbour above, below, to its left and to its right. Any two X's on a diagonal are not connected. In the rectangle below there are 4 discrete shapes.

Sample input data (shape.txt)

Note: The first two numbers are the number of columns and rows in the rectangle. There may be more than one rectangle of shapes in the data file

```
20
13
..........X........
....XXXXXXXXXX.....
....X........X.....
....X..XX..X..X.....
....XXXXX..X..X.....
..........XXXX.....
.........XX.........
........XXX.........
.........X..........
...................X
.............XX.....
.............XXXXXX
....................
```

Sample Output:

```
..........X........
....XXXXXXXXXX.....
....X........X.....
....X..XX..X..X.....
....XXXXX..X..X.....
..........XXXX.....
.........XX.........
........XXX.........
.........X..........
...................X
.............XX.....
.............XXXXXX
....................
```

In rectangle # 1 there are 4 shapes

Judge Data Set 1 - Input

```
20
13
..........x........
....xxxxxxxxxx.....
....x........x.....
....x..xx..x..x.....
....xxxxx..x..x.....
..........xxxx.....
........xx.........
.......xxx.........
........x..........
................x
............xx.....
............xxxxxx
..................
40
40
........................................
........................................
..xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx...
..x.............................xx...
..x................................x...
..x.............................xx...
..x............xxxxxxxxxxxxxx.....xx...
..x...........xx...........xx.....xx..
..x...........xx..xxxxxxxx....xx.....xx.
..x.........xx..xx...........xx.....xx
..x....xxxxxxx....xx...........xx.....x
..x........xx....xxx.........xx......x
..x.........xx.............xx.....xxx
..x...........xx...........xx......x..
..x...........xx.........xx.......x..
..x...........xx........xx........x..
..x............xxxxxxxxxxx.........x..
..x................................x..
..x................................x..
..x............xxxxxxxxxxxxxx.......x..
..x...........xx...........xx.....xx..
..x...........xx..xxxxxxxx....xx.....x.x
..x.........xx..xx...........xx....x..
..x........xx....xx...........xx...x..
..x........xx....xxx.........xx....x..
..x.........xx........xxx...xx.....x..
..x...........xx........x...xx......x..
..x.............xx.........xx.......x..
..x.............xx.......xx.......xx..
..x.............xxxxxxxxxxx.......xx...
..x.............................xx....
..x.............................xx....
..xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx.....
........................................
........................................
........................................
.....................xxxxx..............
.........................xxxx.........
.............................xxxx.....
.............................xxxx.....
50
2
.............xxxxxxx.........xxxxxx........xx....
......xxxxxxxx.......xxxxxxxx.........xx....xxx...
```

```
12
12
............
XXXXX.......
..XXX.......
....X.......
.....XXXXX..
..XXXXX.....
.XXXX..X.X..
XX.....XXX..
XX......X...
XX..XX...XXX
XX..XX...XXX
XX..XX...X..
29
20
..X.....................X..
..X...XXXXXXXXXXXX.......X..
..X............XX........XX..
..X..........XX....XX.....X.X
..X..................XX....X..
..X.........XX....XX.........
..X.........XX....XXX.....X..
..X............XXX...XX...XXX
..X............XX.........X...
..X............X..XX......X...
..X.............XX.........XX
..X..............XXXXXXXXXXX.
..X.........................
..X.........................
..XXXXXXXXXXXXXXXXXXXXXXXXXX
............................
............................
.......................XXXXX..
.............................XX
............................
```

Judge Data Set 1 – Output (20 marks each)

In rectangle # 1 there are 4 shapes
In rectangle # 2 there are 10 shapes
In rectangle # 3 there are 6 shapes
In rectangle # 4 there are 5 shapes
In rectangle # 5 there are 15 shapes

Judge Data Set 2 - Input

```
50
2
..............XXXXXXX.........XXXXXX........XX....
......XXXXXXXX.......XXXXXXXX.........XX....XXX...
12
12
............
XXXXX.......
..XXX.......
....X.......
.....XXXXX..
..XXXXX.....
.XXXX..X.X..
XX.....XXX..
XX......X...
XX..XX...XXX
XX..XX...XXX
XX..XX...X..
29
20
..X.......................X..
..X...XXXXXXXXXXXX.......X..
..X............XX........XX..
..X..........XX....XX.....X.X
..X..................XX....X..
..X.........XX....XX.........
..X.........XX....XXX.....X..
..X............XXX...XX...XXX
..X............XX.........X...
..X............X..XX......X...
..X..............XX.........XX
..X..............XXXXXXXXXXX.
..X..........................
..X..........................
..XXXXXXXXXXXXXXXXXXXXXXXXXX
............................
............................
.......................XXXXX..
.............................XX
............................
```

Judge Data Set 2 – Output (30/30/40 marks)

In rectangle # 1 there are 6 shapes
In rectangle # 2 there are 5 shapes
In rectangle # 3 there are 15 shapes