Lighting Edison's Workplace

Although Joseph Swan was the one who first proposed the light bulb in 1860, Edison improved its structure and created a usable light bulb in 1879. To advertise his product and dominate Joseph Swan during this age, Edison planned to lighten his own workplace. However, although electricity is found and used during this period, there were no plug sockets or separate electricity connection for each single room like today. Therefore, he had only one source of electricity and each of light bulbs has to be connected to that single source by cables. Moreover, he had a limited budget for this task. Hence he had to plan a cost-efficient way to lighten as much area as possible. Additionally, each light bulb could only illuminate L x L area, where L is an odd number and the light bulb is at the center of this area.

The workplace has these following structures:

- **Walls:** The light cannot go through a wall. The walls are defined with the character "#"

- **Areas Needed for Lighting:** Not all of the areas require a lighting. However, if a cell need to be lighten, then that cell is represented by the character ".".

- **Areas Not Need any Lighting:** These are shown with the character "-".

So, an example workplace is as follows:

```
-  -  -  -  -  -  -  #  #  #  #  #  -
-  #  #  #  #  #  -  #  .  .  .  #  -
-  #  .  .  .  #  -  #  .  .  .  #  -
-  #  .  .  .  #  -  #  #  #  #  #  -
-  #  .  .  .  #  -  -  -  -  -  -  -
-  #  .  .  .  #  -  -  -  -  -  -  -
-  #  .  .  .  #  -  -  -  -  -  -  -
-  #  .  .  .  #  -  -  -  -  -  -  -
-  #  #  #  #  #  -  -  -  -  -  -  -
-  -  -  -  -  -  -  -  -  -  -  -  -
```

If $L = 3$, the source of electricity is shown with the letter "E" and placed to the up-left-0-indexed coordinate (3, 1), the light bulbs are shown with "X", and the cables are shown with "1", then the optimal placement for the example above is given below:

```
-  -  -  -  -  -  -  #  #  #  #  #  -
-  #  #  E  1  1  1  1  1  X  .  #  -
-  #  .  1  .  #  -  #  .  .  .  #  -
-  #  .  X  .  #  -  #  #  #  #  #  -
-  #  .  1  .  #  -  -  -  -  -  -  -
-  #  .  1  .  #  -  -  -  -  -  -  -
-  #  .  X  .  #  -  -  -  -  -  -  -
-  #  .  .  .  #  -  -  -  -  -  -  -
-  #  #  #  #  #  -  -  -  -  -  -  -
-  -  -  -  -  -  -  -  -  -  -  -  -
```

(a) For each of the test cases, the whole workplace map, the cost of putting cable to a cell, the cost of placing a light bulb, the range L of each light bulb and the total budget is given. Giving this information, what is the maximum number of cells you can illuminate without spending less than the budget?

Input Format. In the first line, the number of rows, columns and the radius R of the illumination is given. To calculate L, you need to do $2R + 1$. In the second line, the cost of putting a cable into one cell, the cost of one light bulb and the budget we have is written. The following lines give the map of the area.