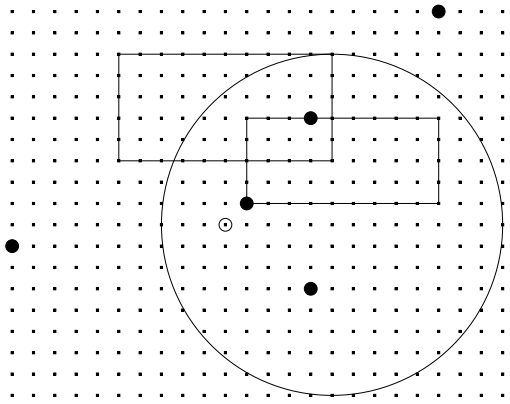
Hitting the Targets

Problem ID: hittingtargets

A fundamental operation in computational geometry is determining whether two objects touch. For example, in a game that involves shooting, we want to determine if a player's shot hits a target. A shot is a two dimensional point, and a target is a two dimensional enclosed area. A shot hits a target if it is inside the target. The boundary of a target is inside the target. Since it is possible for targets to overlap, we want to identify how many targets a shot hits.



The figure above illustrates the targets (large unfilled rectangles and circles) and shots (filled circles) of the sample input. The origin $(0, 0)$ is indicated by a small unfilled circle near the center.

Input

Input starts with an integer $1 \leq m \leq 30$ indicating the number of targets. Each of the next m lines begins with the word `rectangle` or `circle` and then a description of the target boundary. A rectangular target's boundary is given as four integers $x_1\ y_1\ x_2\ y_2$, where $x_1 < x_2$ and $y_1 < y_2$. The points (x_1, y_1) and (x_2, y_2) are the bottom-left and top-right corners of the rectangle, respectively. A circular target's boundary is given as three integers $x\ y\ r$. The center of the circle is at (x, y) and the $0 < r \leq 1000$ is the radius of the circle.

After the target descriptions is an integer $1 \leq n \leq 100$ indicating the number of shots that follow. The next n lines each contain two integers $x\ y$, indicating the coordinates of a shot. All x and y coordinates for targets and shots are in the range $[-1000, 1000]$.

Output

For each of the n shots, print the total number of targets the shot hits.

Sample Input 1	**Sample Output 1**
3 rectangle 1 1 10 5 circle 5 0 8 rectangle -5 3 5 8 5 1 1 4 5 10 10 -10 -1 4 -3	2 3 0 0 1