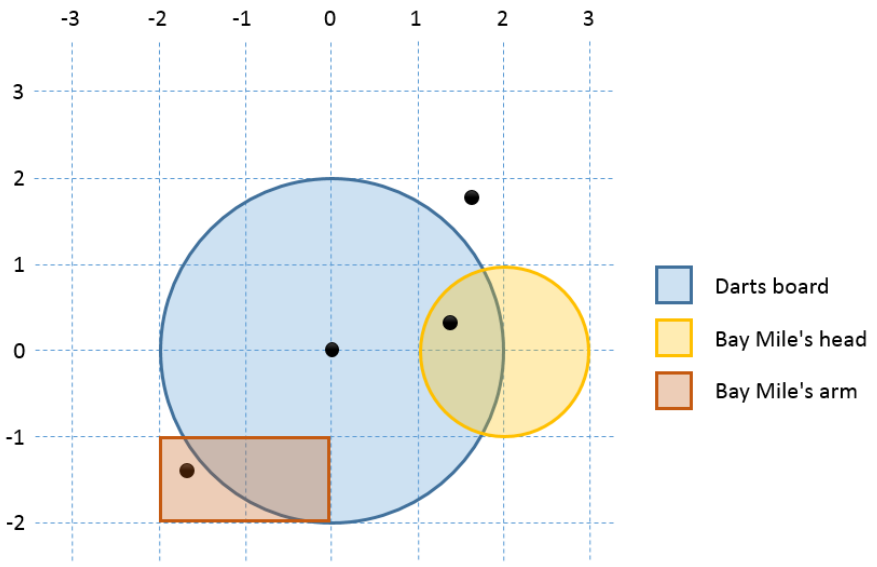
Problem 1 - Darts

Bay Spiro picked up his beer and 3 razor-sharp arrows and aimed at the darts board. What he saw was **bay Mile's head** and **right arm** standing in front of the board. What could go wrong?

The rules of the game are as follows:



Bay Spiro is given **n** dart arrows. He starts with **0 points** and bay Mile starts with **100 health**. If he hits an **area inside the darts board**, bay Spiro earns **50 points**. If he happens to hit bay Mile as well, he is granted only **25 points**.

If he hits bay Mile in the head, bay Mile loses **25 health**. If he hits bay Mile in the arm, he loses **30 health**.

After bay Spiro has thrown all arrows, you must print on the console the following data: **total points**, **board hit ratio** (successfully board hits / total shots made) and bay Mile's **remaining health**.

If bay Mile reaches **0 or less health** at any time during play, the game must end immediately (and he receive his daily Rakia treatment).

Input

The input will be read from the standard input.

- On the first input line you will receive the coordinates of the darts board and its radius in the format **{boardX} {boardY} {boardRadius}**
- On the second input line you will receive the coordinates of bay Mile's head and its radius in the format **{headX} {headY} {headRadius}**
- On the third input line you will receive the bay Mile's arm coordinates in the format **{topLeftX} {topLeftY} {bottomRightX} {bottomRightY}**
- On the fourth input line you will receive the number of shots **n** bay Spiro will make.
- On the next **n** lines you will receive the coordinates of each shot bay Spiro makes in the format **{shotX} {shotY}**

The input will always be valid and in the format described, there is no need to check it explicitly.

Output

The output should be printed on the standard output. You must print the **total points**, **successful hit ratio** and **bay Mile's health** (his health cannot fall below 0). The hit ratio should be rounded to the lower integer (e.g. 66.666 = 66).

Constraints

- The darts **board** and bay Mile's **head** will always be circles.
- Bay Mile's **arm** will always be a rectangle.
- Bay Mile's head and arm will **not overlap**.
- Object **boundaries** are considered part of the object.
- The input coordinates will be floating-point numbers in the range [-100…100].
- Using C++ is **forbidden**.

- Allowed working time: 0.1 seconds. Allowed memory: 16 MB.

Examples

Input	Comments	Output
0 0 2 2 0 1 -2 -1 0 -2 4 0 0 1.7 1.85 1.3 0.38 -1.7 -1.3	 Hit right in center. **+50 points** Miss. Hit board and bay Mile's head. **+25 points -25 health** Miss board, hit bay Mile's arm. **-30 health**	Points: 75 Hit ratio: 50% Bay Mile: 45

Input	Comments	Output
0 0 2 2 0 1 -2 -1 0 -2 8 2 0 3 0 3 0 2 0 0 0 3.2 6.5 7.2 0.3 -5 -3.0	 Hit board and head. **+25 points -25 health** Hit head. **-25 health** Hit head. **-25 health** Hit board and head. **+25 points -25 health** (bay Mile falls to **0 health**, game over)	Points: 50 Hit ratio: 50% Bay Mile: 0 (hit ratio is 50% - 2 successful shots / 4 fired shots)