

# Robber vs Miser

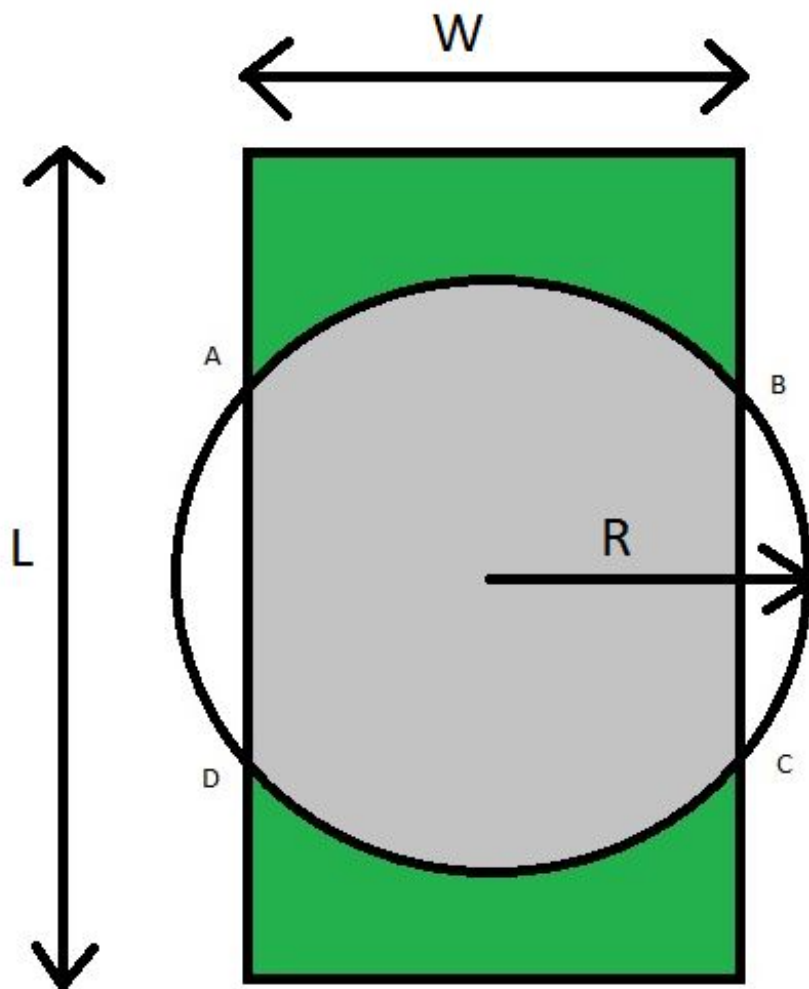
Have you ever heard the name of a very dangerous Robber "Romeo"? He used to rob on Jessore-Khulna highway. One night he, with his gangs, barricaded a pickup van. But he was disappointed because it was only carrying some cows. Since cows are hard to transport, he robbed only one cow and took it home. Robber Romeo has no field with grass but he knew his next door neighbor Mr. Hasan had one. So he went to Mr. Hasan to get a permission to feed his cow from the grass field. But you may not know, Mr. Hasan is a miser person. He only allowed a portion of his grass field that is rectangular shaped that has width of  $W$  meter and length of  $L$  meter. So Romeo tied the cow with a rope of length  $R$ , at the center of the rectangle.

Now, given  $W$ ,  $L$ , and  $R$ , can you find the area of the field from where the cow can eat grass

$$1 \leq L \leq 200$$

$$1 \leq R \leq L/2$$

$$1 \leq W \leq 2 * R$$



Or, formally, given the length  $L$ , width  $W$  and radius  $R$ , you have to find the area of the gray portion  $ABCD$  from the figure, where

$$1 \leq L \leq 200$$

$$1 \leq R \leq L/2$$

$$1 \leq W \leq 2 * R$$

It is guaranteed that the cow is tied right at the center of the rectangle.

## Input

The first line of input is an integer  $T$  by itself.  $1 \leq T \leq 500$ . Next follows  $T$  cases. Every case consist of a line containing three real number  $L$ ,  $W$  and  $R$ , separated by spaces. Constraints are given in the description. Read that carefully.

## Output

For every case, print the case number and the area. Print 6 decimal places after the decimal ( '.' ) sign. See sample input/output for the accurate format.

## Note

Consider  $\text{Pi} = \text{acos}(-1.0)$

## Example

**Input:**

```
3
40.33 9.02 4.77
71.20 4.15 14.19
80.13 53.27 39.74
```

**Output:**

```
Case 1: 70.397365
Case 2: 117.355903
Case 3: 3891.108151
```

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Used in Eid 2016 contest.  
More about Eid 2016 contest: [Click Here](#)