

# Problem A

## Cricket/Football Goes Down

**Input:** standard input

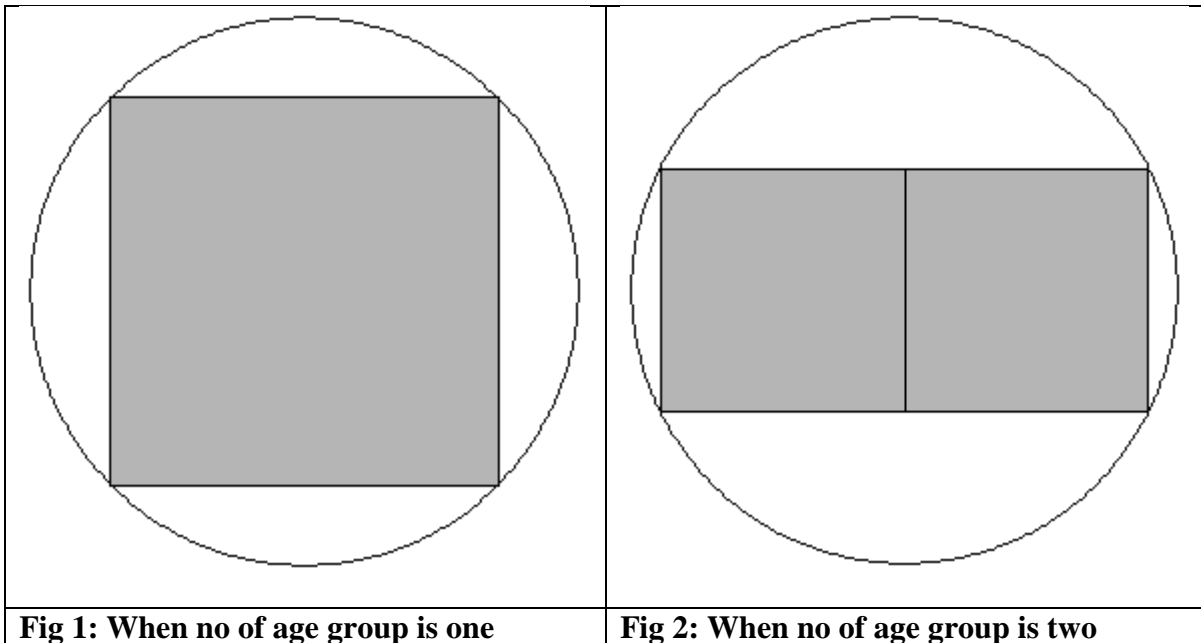
**Output:** standard output

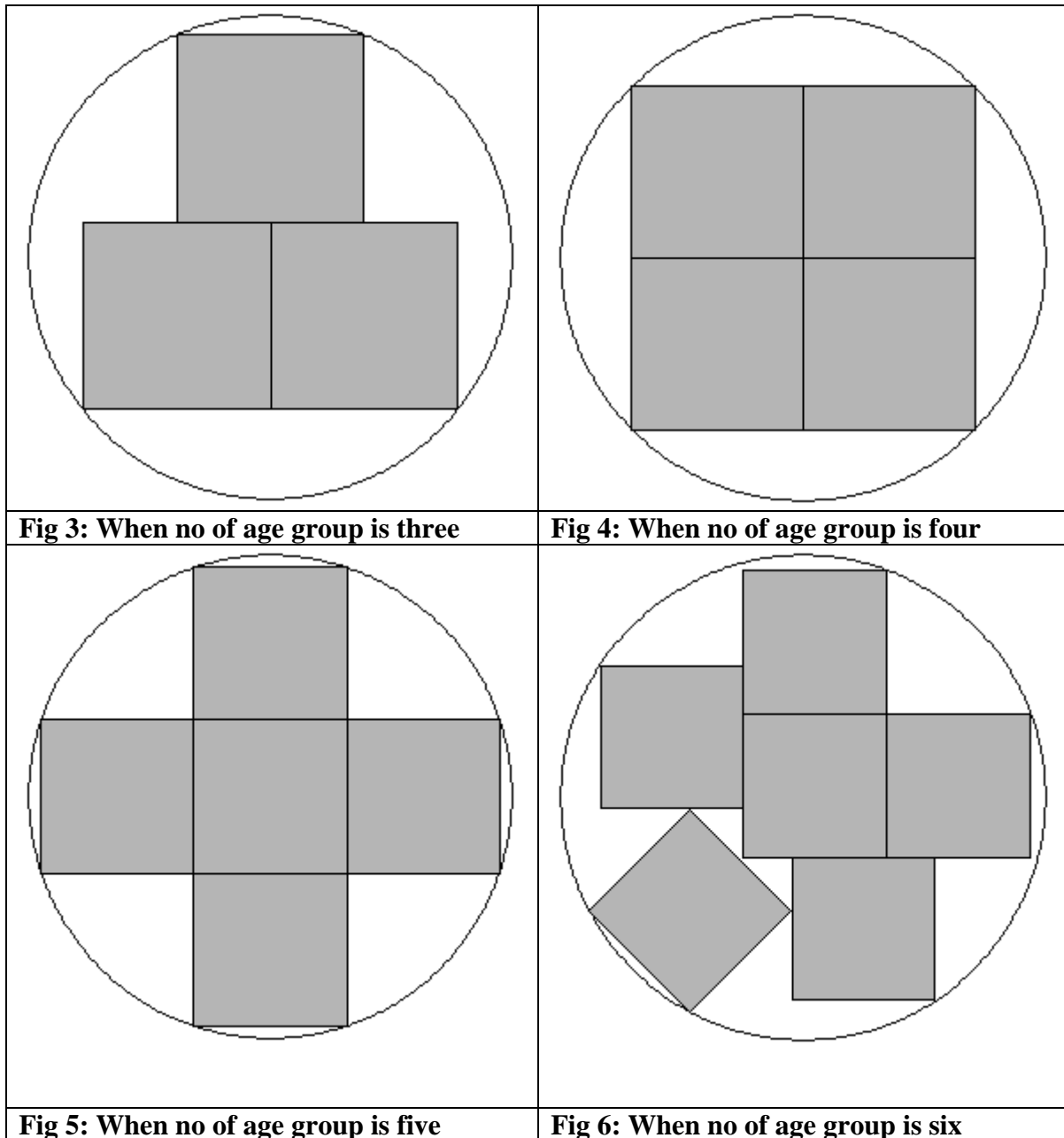
**Time Limit:** 4 seconds

**Memory Limit:** 32 MB

The failure of National Cricket and Football Team of Bangladesh in international tournaments is a common incident now. So most people of Bangladesh don't know what to expect from their beloved(!) teams. But our performance in Programming Contests is not that bad (Although not excellent). So one or two people from the older generation and a few mad people of the younger generation (Most prominent example is that terrible problem setter Shahriar Manzoor. Recent additions Mustaq Ahmed, Md. Kamruzzaman and Sajjad Hossain, although they are not that terrible) have been trying hard to popularize Programming Contests just like the once popular sports Football and Cricket. So far their efforts have not been that successful, but they have now convinced the Government of Bangladesh. As a result large hall rooms are being built in the field of the stadiums of Bangladesh. In these hall rooms programming contests of different age groups will be held.

The problem is that the hall rooms are all square shaped and the stadiums are all circular. And the number of age groups will be less than seven. The following pictures show how one can optimally build 1, 2, 3, 4, 5 and 6 square shaped hall rooms in a circular stadium. You can assume that whenever the pictures look exactly symmetric along a certain axis they are symmetric. In the 6<sup>th</sup> figure the one square whose sides are not parallel to x or y axis is actually rotated 45 degree.





As usual the big guns of the country are providing many suggestions about the size of the hall room. Being a helpless programmer in the country (The intelligent people are helpless) your job is to determine the minimum radius of the stadium where  $N$  ( $0 < N \leq 6$ ) square shaped hall rooms of length  $A$  can be built.

## Input

The first line of the input file contains a single integer  $D$  ( $D \leq 10000$ ) which denotes how many lines of inputs are there. Each of the next  $D$  lines contains one sets of input. Each set contains a floating point number  $A$  whose meaning is described in the problem statement.

## Output

For each line of input produce one line of output. This line contains six floating point numbers **r1, r2, r3, r4, r5, r6**. Here **r1** denotes the minimum possible radius of the stadium when only one hall room is built; **r2** denotes the minimum possible radius of the stadium when only two hall rooms are built. Other four numbers have similar meanings. This radius should have eleven digits after the decimal point. A special judge will be used to check your solution. So you need not worry about small precision errors. To be precise you should not worry about errors less than **max(0.000000001, 0.0000001 %)**

## Sample Input

```
2
0.000000001
0.000000002
```

## Sample Output

```
0.000000000707 0.000000001118 0.000000001288 0.000000001414 0.000000001581 0.000000001689
0.000000001414 0.000000002236 0.000000002577 0.000000002828 0.000000003162 0.000000003377
```

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**Shahriar Manzoor**