Calculating Volume

You are given a class *Solution* and its *main* method in the editor. In each test cases, it takes an input ch which represents a choice of the following:

- $ch = 1$ represents the volume of a cube that has to be calculated where a represents the length of the sides of the cube.

- $ch = 2$ represents the volume of a cuboid that has to be calculated where l, b, h represent the dimensions of a cuboid.

- $ch = 3$ represents the volume of a hemisphere that has to be calculated where r represents the radius of a hemisphere.

- $ch = 4$ represents the volume of a cylinder that has to be calculated where r, h represent the radius and height of the cylinder respectively.

Your task is to create the class *Calculate* and the required methods so that the code prints the volume of the figures rounded to exactly 3 decimal places.

In case any of the *dimensions* of the figures are ≤ 0, print *"java.lang.NumberFormatException: All the values must be positive"* without quotes and *terminate the program*.

Note: Use Math.PI or 3.14159265 as the value of pi.

Input Format

First line contains T, the number of test cases. Each test case contains ch, representing the choice as given in the problem statement.

- When *ch=1*, Next line contains a, length of the sides of the cube.

- When *ch=2*, Next three lines contain l, b, h representing length, breadth and height of the cuboid respectively. l, b, h will be in three separate lines

- When *ch=3*, Next line contains r, the radius of the hemisphere

- When *ch=4*, Next two lines contain r, h representing the radius and height of the cylinder respectively. r, h will be in two separate lines.

Note: You have to determine the *data type* of each parameter by looking at the code given in the *main* method.

Constraints
$1 \leq ch \leq 4$
$-100 \leq a, l, b, h, r \leq 100$
There will be at most 3 digits after decimal point in input.

Output Format

For each test case, print the answer rounded up to exactly 3 decimal places in a single line. For example, *1.2345* should be rounded to *1.235*, *3.12995* should be rounded to *3.130*.

Sample Input 1

```
2
1
4
4
67.89
-98.54
```

Sample Output 1

```
64.000
java.lang.NumberFormatException: All the values must be positive
```

Explanation

There are two test cases. In the first test case $ch = 1$, means you have to calculate the volume of a cube. The next line contains the a=4, means the side of the cube is 4. So the volume of the cube is 64.000.

In the second test case, you have to calculate volume of a cylinder. But the height of the cylinder is negative, so an exception is thrown.

Sample Input 2

```
1
3
1.02
```

Sample Output 2

```
2.223
```