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
```