2. Python: Shape Classes with Area Method

Implement two classes:

Rectangle:

- The constructor for Rectangle must take two arguments that denote the lengths of the rectangle's sides.
- The class must have an area method that returns the area of the rectangle.

Circle:

- The constructor for Circle must take one argument that denotes the radius of the circle.
- The Circle class must have an area method that returns the area of the circle. To implement the area method, use a precise Pi value, preferably the constant math.pi.

Your implementation of all the classes will be tested by a provided code stub on several input files. Each input file contains *several* queries, and each query constructs an object of one of the classes and prints the area of this object to the standard output with exactly 2 decimal points.

Constraints

- $1 \leq$ the number of queries in one test file $\leq 10^5$
- $1 \leq$ the value of all parameters passed to construct the objects $\leq 10^3$

▼ Input Format Format for Custom Testing

In the first line, there is a single integer, *q*, the number of queries.
Then, *q* lines follow. In the i^{th} of them, there are space-separated parameters. The first of them denotes the shape to be constructed, and the remaining parameters denote the parameters for the constructor.

▼ Sample Case 0

Sample Input

```
STDIN             Function
-----             --------
2             →   number of queries, q = 2
circle 1      →   query parameters = ["circle 1", "rectangle 2 3"]
rectangle 2 3
```

Sample Output

```
3.14
6.00
```

Explanation
There are 2 queries. In the first of them, an object of class Circle with radius 1 is constructed. Then, the value of its area property, with exactly 2 decimal points, is printed to the output. Since the radius of the circle is 1, then the printed area is 3.14 (pi * radius^2). In the second query, the object of class Rectangle is constructed with side lengths of 2 and 3. Then, the value of its area property, with exactly 2 decimal points, is printed to the output. Since the side lengths are 2 and 3, then the printed area is 6.00.

▼ Sample Case 1

Sample Input

```
STDIN            Function
-----            --------
3            → number of queries, q = 3
rectangle 5 7  → query parameters = ["rectange 5 7", "rectangle 7 5", "circle 1000"]
rectangle 7 5
circle 1000
```

Sample Output

```
35.00
35.00
3141592.65
```

Explanation
There are 3 queries. In the first of them, an object of class Rectangle with side lengths of 5 and 7 is constructed. Then, the value of its area property (5 * 7 = 35), with exactly 2 decimal points, is printed to the output (35.00). The second query likewise returns the same result, since (7 * 5 = 35). In the third query, an object of class Circle with radius 1000 is constructed. Then, the value of its area property, with exactly 2 decimal points is printed to the output. Since the radius of the circle is 1000, then the printed area is (pi * 1000^2) = 3141592.65.