Arguments

Write a program that accepts the dimensions of a shape and prints its corresponding area.

PROGRAM DESIGN
Create a class named Shape. Only this class should exist. Within this class, are the following methods: the constructor method and the printArea method**. Only this class should exist and should be coded within your file.** Name your file as Shape.py

Shape
- *a
+ printArea()

The constructor should accept *any number* of arguments. These arguments are the length of each side of a given shape or polygon. (i.e. given a triangle, with a base length of 3, the constructor should accept 3 arguments, each with a 3 value.). However, if only 1 argument was passed to the constructor, it is assumed that this is the *diameter* of a circle.

The printArea method, gets and prints the area of the shape given its dimensions.

Only the following shapes are entertained in the printArea method: **triangle** (*equilateral*), equilateral **square** and a **circle**. However, if the user entered any number of arguments, other than 4 (square), 3 (e. triangle), or, 1 (circle) - then, the error "Shape Area Error!" should be printed instead. Also note that this error should also be printed <u>if the user didn't enter equal sides for the square and the triangle</u>.

Shape:	Area
Square	a^2
Equilateral Triangle	$\frac{\sqrt{3}}{4}a^2$
Circle	πa^2

Note: Please use **3.14159** as *the constant PI value.* For square root functionality, kindly import the math library as needed. Also, please note that a – for the case of Squares and E. Triangles is the length of 1 side of the shape. Whereas a – for the case of Circles is the **radius** of the circle (radius is half of the diameter, which is the entire thickness/width of a circle. Radius is half the thickness/width of the circle)

Name this exercise as *Shape.py*

INPUT

There will be *no inputs* for this exercise, as you are only tasked to create the required class. However, if you want to try the test cases below, you can download the inputs.py file – and run it along with your Shape.py file. Note: you are *not* allowed to edit the contents of inputs.py or place the contents of inputs.py in Shape.py!

OUTPUT

Once the user enters the input, the program should be able to calculate and print the given shape's area, rounded off to 1 floating point (use %.1f). However, if the user decides to enter less or more than the required number of arguments (2, 5 or more arguments), then the program should output "Shape Area Error!" instead.

SAMPLE INPUT

```
3 5 7
5 5 5
3 3 3 3
5
2 2
1 2 3 4 5
```

SAMPLE OUTPUT

```
Shape Area Error!
10.8
9.0
19.6
Shape Area Error!
Shape Area Error!
```