<u>Assignment -3</u>

Subject	OOP
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Problem Statement

Calculate area of triangle, square & circle using function overloading. Function parameter accept from user. Create Base Class **Shape** and Derived Classes **Triangle, Square, Circle** respectively. Implement **getInputs()** Method for accepting inputs, and Overload **setArea()** method for calculating area of respective shapes.

Use Class **Tester** for creating objects.

Sample Input and Output

Sample Input/Parameter for Triangle	Values	Expected Output
Height (H)	50	2500
Base (B)	100	

Sample Input/Parameter for Circle	Values	Expected Output
π (Pie)	3.14	7853.98
Radius (R)	50	

Sample Input/Parameter for Square	Values	Expected Output
Side (S)	15	225

```java
import java.util.Scanner;

class Shape {
    public double calculateArea() {
        return 0;
    }
}

class Triangle extends Shape {
    double base;
    double height;

    public Triangle(double b, double h) {
        base = b;
        height = h;
    }

    @Override
    public double calculateArea() {
        return 0.5 * base * height;
    }
}

class Square extends Shape {
```

```java
    double side;

    public Square(double s) {
        side = s;
    }

    @Override
    public double calculateArea() {
        return side * side;
    }
}

class Circle extends Shape {
    double radius;

    public Circle(double r) {
        radius = r;
    }

    @Override
    public double calculateArea() {
        return Math.PI * radius * radius;
    }
}

public class Area {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.println("Enter the base and height of the triangle:");
        double base = input.nextDouble();
        double height = input.nextDouble();
        Triangle triangle = new Triangle(base, height);

        System.out.println("Enter the side of the square:");
        double side = input.nextDouble();
        Square square = new Square(side);

        System.out.println("Enter the radius of the circle:");
        double radius = input.nextDouble();
        Circle circle = new Circle(radius);

        System.out.println("The area of the triangle is " +
triangle.calculateArea());
        System.out.println("The area of the square is " +
square.calculateArea());
        System.out.println("The area of the circle is " +
circle.calculateArea());
    }
}
```

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Run: Area ✕

```
C:\Users\Sarika\.jdks\openjdk-17\bin\java.exe "-javaagent:C:\
Enter the base and height of the triangle:
50
100
Enter the side of the square:
15
Enter the radius of the circle:
50
The area of the triangle is 2500.0
The area of the square is 225.0
The area of the circle is 7853.981633974483

Process finished with exit code 0
```