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LAB 08

02.

```
interface Shape {  
  
    double calculateArea();  
  
    double calculatePerimeter();  
}  
  
class Circle implements Shape {  
  
    private double radius;  
  
    public Circle(double radius) {  
        this.radius = radius;  
    }  
  
    public double getRadius() {  
        return radius;  
    }  
}
```

```
public void setRadius(double radius) {  
    this.radius = radius;  
}
```

```
@Override
```

```
public double calculateArea() {  
    return Math.PI * Math.pow(radius, 2);  
}
```

```
@Override
```

```
public double calculatePerimeter() {  
    return 2 * Math.PI * radius;  
}  
}
```

```
class Rectangle implements Shape {
```

```
    private double length;  
    private double breadth;
```

```
    public Rectangle(double length, double breadth) {  
        this.length = length;  
        this.breadth = breadth;  
    }
```

```
    public double getLength() {  
        return length;  
    }
```

```
public void setLength(double length) {  
    this.length = length;  
}
```

```
public double getBreadth() {  
    return breadth;  
}
```

```
public void setBreadth(double breadth) {  
    this.breadth = breadth;  
}
```

```
@Override  
public double calculateArea() {  
    return length * breadth;  
}
```

```
@Override  
public double calculatePerimeter() {  
    return 2 * (length + breadth);  
}  
}
```

```
class Triangle implements Shape {
```

```
    private double side1;  
    private double side2;  
    private double side3;
```

```
public Triangle(double side1, double side2, double side3) {  
    this.side1 = side1;  
    this.side2 = side2;  
    this.side3 = side3;  
}
```

```
public double getSide1() {  
    return side1;  
}
```

```
public void setSide1(double side1) {  
    this.side1 = side1;  
}
```

```
public double getSide2() {  
    return side2;  
}
```

```
public void setSide2(double side2) {  
    this.side2 = side2;  
}
```

```
public double getSide3() {  
    return side3;  
}
```

```
public void setSide3(double side3) {  
    this.side3 = side3;  
}
```

@Override

```
public double calculateArea() {  
    double s = (side1 + side2 + side3) / 2;  
    return Math.sqrt(s * (s - side1) * (s - side2) * (s - side3));  
}
```

@Override

```
public double calculatePerimeter() {  
    return side1 + side2 + side3;  
}  
}
```

public class Main {

public static void main(String[] args) {

Circle circle = new Circle(5);

Rectangle rectangle = new Rectangle(10, 5);

Triangle triangle = new Triangle(5, 10, 12);

System.out.println("The area of the circle is: " + circle.calculateArea());

System.out.println("The perimeter of the circle is: " + circle.calculatePerimeter());

System.out.println("The area of the rectangle is: " + rectangle.calculateArea());

System.out.println("The perimeter of the rectangle is: " + rectangle.calculatePerimeter());

System.out.println("The area of the triangle is: " + triangle.calculateArea());

System.out.println("The perimeter of the triangle is: " + triangle.calculatePerimeter());

}

}