6. Develop a JAVA program to create an abstract class Shape with abstract methods calculateArea() and calculatePerimeter(). Create subclasses Circle and Triangle that extend the Shape class and implement the respective methods to calculate the area and perimeter of each shape.

Shape.java

```
public abstract class Shape
{
    // Abstract methods to calculate area and perimeter
    public abstract double calculateArea();
    public abstract double calculatePerimeter();
}

// Circle class, a subclass of Shape
class Circle extends Shape
{
    private double radius;

    public Circle(double radius)
    {
        this.radius = radius;
    }

    // Implementing abstract methods

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

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


class Triangle extends Shape
{
    private double side1, side2, side3;

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

    // Implementing abstract methods
    public double calculateArea()
    {
        // Using Heron's formula to calculate the area of a triangle
        double s = (side1 + side2 + side3) / 2;
```

```
        return Math.sqrt(s * (s - side1) * (s - side2) * (s - side3));
    }

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

class Main {
    public static void main(String[] args) {
        // Creating objects of Circle and Triangle
        Circle circle = new Circle(5.0);
        Triangle triangle = new Triangle(3.0, 4.0, 5.0);

        // Displaying area and perimeter of the Circle
        System.out.println("Circle - Area: " + circle.calculateArea());
        System.out.println("Circle - Perimeter: " +
circle.calculatePerimeter());

        // Displaying area and perimeter of the Triangle
        System.out.println("Triangle - Area: " +
triangle.calculateArea());
        System.out.println("Triangle - Perimeter: " +
triangle.calculatePerimeter());
    }
}
```