```java
package lab05;

import java.util.Scanner;

public class Circle {

    // Instance variables
    private static final double PI = Math.PI;
    private double radius, diameter, circumference, area;

    // compile time polymorphism with constructor overloading
    public Circle() {
        System.out.println("Zero param");
        radius = 0;
        calculateArea();
        calculateCircumference();
        setDiameter(0);
    }

    public Circle(double radius) {
        System.out.println("1 param");
        this.radius = radius;
        calculateArea();
        calculateCircumference();
        setDiameter(radius);
    }

    public Circle(double radius, double area) {
        System.out.println("2 param");
        this.radius = radius;
        calculateArea();
        calculateCircumference();
        setDiameter(radius);
    }

    // GETTER & SETTERS

    public double getRadius() {
        return radius;
    }

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

    public double getDiameter() {
        return diameter;
```

```
48      }
49
50      public void setDiameter(double diameter) {
51          //this.diameter = diameter;
52          this.diameter = 2*this.radius;
53      }
54
55      public double getCircumference() {
56          return circumference;
57      }
58
59      public void setCircumference(double circumference) {
60          this.circumference = circumference;
61      }
62
63      public double getArea() {
64          this.calculateArea();
65          return area;
66      }
67
68      public void setArea(double area) {
69          // this.area = area;
70          calculateArea();
71      }
72
73      public static double getPI() {
74          return PI;
75      }
76
77      // initialize instance variables
78      public void initObject() {
79          radius = 1000;
80          diameter = 2*radius;
81          area = PI * radius * radius;
82          circumference = 2 * PI * radius;
83      }
84
85      public void readRadius() {
86          Scanner in = new Scanner(System.in);
87          System.out.println("Enter radius: ");
88          radius = in.nextDouble();
89  //      diameter = 2*radius;
90  //      area = PI * radius * radius;
91  //      circumference = 2 * PI * radius;
92      }
93
94      // compute area
```

```
 95     public void calculateArea() {
 96         area = PI * radius * radius;
 97     }
 98 
 99     public void calculateCircumference() {
100         circumference = 2 * PI * radius;
101     }
102 
103 
104     public String toString(String name) {
105         return String.format("%s: [PI: %f, radius: %f, diameter: %f,
    circumference: %f, area: %f]", name, PI, radius,
106                 diameter, circumference, area);
107     }
108 
109 }
110 
```