public class Shape {
    // Pretend we didn't know about Math.PI
    protected final double PI = 3.1415927;
    private String color;
    private String type;

    public Shape(String myColor) {
        color = myColor;
        type = getClass().getName();
    }

    public double calculateArea() {
        return 0;
    }

    public double calculatePerimeter() {
        return 0;
    }

    public String getColor() {
        return color;
    }

    public String getType() {
        return type;
    }
}

public class Circle extends Shape {
    private double radius;
    private double circumference;

    public Circle(String myColor, double myRadius) {
        super(myColor);
        radius = myRadius;
        circumference = 2 * PI * radius;
    }

    public double calculateArea() {
        return PI * radius * radius;
    }

    public double calculatePerimeter() {
        return circumference;
    }

    public double getRadius() {
        return radius;
    }
}
public class Rectangle extends Shape {
    private double length;
    private double width;

    public Rectangle(String myColor, double myLength, double myWidth) {
        super(myColor);
        // The program would not compile without the above line
        length = myLength;
        width = myWidth;
    }

    public double calculateArea() {
        return length * width;
    }

    public double calculatePerimeter() {
        return 2 * (length + width);
    }
}

public class TestShapes {
    public static void main(String[] args) {
        Shape[] myShapes;
        myShapes = new Shape[3];
        myShapes[0] = new Circle("BLUE", 10.0);
        myShapes[1] = new Rectangle("RED", 5.0, 7.0);
        myShapes[2] = new Circle("GREEN", 8.0);

        for (int s = 0; s < myShapes.length; s++) {
            System.out.print("Shape "+ s + " is a ");
            System.out.print(myShapes[s].getColor() + " ");
            System.out.print(myShapes[s].getType());
            System.out.print(" with an area of ");
            System.out.println(myShapes[s].calculateArea());
            if (myShapes instanceof Circle)
                System.out.print("", a radius of " +
                ((Circle)myShapes[s]).getRadius() + "," );
            System.out.print(" and a perimeter of ");
            System.out.println(myShapes[s].calculatePerimeter());
        }
    }
}

OUTPUT:
Shape 0 is a BLUE Circle with an area of 314.15927, a radius of 10.0, and a perimeter of 62.831854
Shape 1 is a RED Rectangle with an area of 35.0 and a perimeter of 24.0
Shape 2 is a GREEN Circle with an area of 201.0619328, a radius of 8.0, and a perimeter of 50.2654832