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Q Develop a java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named rectangle, triangle and circle such that each one of the classes extends the class Shape. Each one of the classes contain only method printArea() that prints the area of the given shape.

Ans

```
abstract class Shape{

    protected int dimension1;
    protected int dimension2;
    this.dimension1 = dimension1;
    public Shape (int dimension1, int dimension2)
        {
            this.dimension1 = dimension1;
            this.dimension2 = dimension2;
        }

    public abstract void printArea();
}

Class Rectangle extends Shape{

    public Rectangle ( int width, int height){
        {
            super (width, height);
        }
```

```
public void printArea() {
    int area = dimension1 * dimension2;
    System.out.println("Area of Rectangle: " + area);
}
}

Class Triangle extends shape {

public Triangle extends Shape {

    public Triangle (int base, int height) {

        super(base, height);
    }

    public void printArea() {

        double area = 0.5 * dimension1 * dimension2;
    System.out.println("Area of triangle: " + area);

}
}

Class Circle extends Shape {

    public Circle (int radius) {

        super(radius, 0);

    }

    public void printArea () {
        double area = Math.PI * dimension1 *
                                    dimension1;
    System.out.println("Area of Circle: " + area);
}
}
```

```
public class lab4{

    public static void main(String[] args)
    {
        Shape rectangle = new Rectangle(5,10);
        rectangle.printArea();
        Shape triangle = new Triangle(5,10);
        triangle.printArea();

        Shape circle = new Circle(7);
        circle.printArea();
    }
}
```

Output :→ Area of Rectangle : 50
Area of Triangle : 25.0
Area of Circle : 153.93804002589

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```
abstract class Shape {
    int dimension1;
    int dimension2;
    Shape(int dimension1, int dimension2) {
        this.dimension1 = dimension1;
        this.dimension2 = dimension2;
    }
    public abstract void printArea();
}
class Rectangle extends Shape {
    public Rectangle(int width, int height) {
        super(width, height);
    }

    public void printArea() {
        int area = dimension1 * dimension2;
        System.out.println("Area of Rectangle: " + area);
    }
}
class Triangle extends Shape {
    public Triangle(int base, int height) {
        super(base, height);
    }

    public void printArea() {
        double area = 0.5 * dimension1 * dimension2;
        System.out.println("Area of Triangle: " + area);
    }
}
class Circle extends Shape {
    public Circle(int radius) {
        super(radius, 0);
    }

    public void printArea() {
        double area = Math.PI * dimension1 * dimension1;
        System.out.println("Area of Circle: " + area);
    }
}
public class lab4 {
    public static void main(String[] args) {
        Shape rectangle = new Rectangle(5, 10);
        rectangle.printArea();

        Shape triangle = new Triangle(5, 10);
        triangle.printArea();

        Shape circle = new Circle(7);
        circle.printArea();
    }
}
```

```
Microsoft Windows [Version 10.0.22631.4460]
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C:\Users\sanch>cd C:\Users\sanch\Desktop\java

C:\Users\sanch\Desktop\java>javac lab4.java

C:\Users\sanch\Desktop\java>java lab4
Area of Rectangle: 50
Area of Triangle: 25.0
Area of Circle: 153.93804002589985
```