Create an abstract class Figure with following properties and functions:

Properties:

double dim1;

Methods:

abstract void findArea();

abstract void findPerimeter();

Create three subclasses Circle, Rectangle and Triangle that extends Figure class and define both

the methods.

Write a program that will find the area and perimeter of 3 Figures and print the

details for all.

**PROGRAM:**

**public** **abstract** **class** Figure {

**public** **double** dim1;

**public** **abstract** **double** findArea();

**public** **abstract** **double** findPerimeter();

}

**public** **class** Rectangle **extends** Figure {

**private** **final** **double** dim1, length; //sides

**public** Rectangle(**double** dim1, **double** length) {

**this**.dim1 = dim1;

**this**.length = length;

}

@Override

**public** **double** findArea() {

// A = w \* l

**return** dim1 \* length;

}

@Override

**public** **double** findPerimeter() {

// P = 2(w + l)

**return** 2 \* (dim1 + length);

}

}

**public** **class** ShapeAndArea {

**public** **static** **void** main(String[] args) {

// Rectangle test

Rectangle rectangle = **new** Rectangle(5, 5);

System.***out***.println("Rectangle width: 5 and length: 5" );

System.***out***.println("Area: " + rectangle.findArea());

System.***out***.println("perimeter: " + rectangle.findPerimeter());

System.***out***.println("\n");

// Circle test

Circle circle = **new** Circle(5);

System.***out***.println("Circle radius: 5 ");

System.***out***.println("Area: " + circle.findArea());

System.***out***.println("perimeter: " + circle.findPerimeter());

System.***out***.println("\n");

// Triangle test

Triangle triangle = **new** Triangle(5,5,5);

System.***out***.println("Triangle sides of dimensions (5,5,5)");

System.***out***.println("Area: " + triangle.findArea());

System.***out***.println("perimeter: " + triangle.findPerimeter());

}

}

**import** **static** java.lang.Math.\*;

**public** **class** Circle **extends** Figure {

**public** Circle(**double** dim1){

**this**.dim1=dim1;

}

**public** **double** findArea()

{

**return** ***PI***\**pow*(dim1,2);

}

**public** **double** findPerimeter()

{

**return** ***PI***\*2\*dim1;

}

}

**public** **class** Triangle **extends** Figure {

**private** **double** dim2,dim3;

**public** Triangle(**double** dim1, **double** dim2, **double** dim3){

**this**.dim1=dim1;

**this**.dim2=dim2;

**this**.dim3=dim3;

}

@Override

**public** **double** findArea() {

// **TODO** Auto-generated method stub

**double** s =(dim1+dim2+dim3)/2;

**return** Math.*sqrt*(s \* (s - dim1) \* (s - dim2) \* (s - dim3));

}

@Override

**public** **double** findPerimeter() {

// **TODO** Auto-generated method stub

**return** dim1+dim2+dim3;

}

}

**OUTPUT:**

Rectangle width: 5 and length: 5

Area: 25.0

perimeter: 20.0

Circle radius: 5

Area: 78.53981633974483

perimeter: 31.41592653589793

Triangle sides of dimensions (5,5,5)

Area: 10.825317547305483

perimeter: 15.0