**23/9/20**

**1.**

interface Shape{

double pi =3.14;

public double perimeter();

public double area();

}

class Circle implements Shape{

float radius;

Circle(float r){

radius = r;

}

public double area(){

return pi\*radius\*radius;

}

public double perimeter(){

return 2\*pi\*radius;

}

}

class Ecllipse implements Shape{

float a,b;

Ecllipse(float a,float b){

this.a = a;

this.b=b;

}

public double perimeter(){

return (2\*pi\*Math.sqrt(a\*a+b\*b));

}

public double area(){

return pi\*a\*b;

}

}

public class Main

{

public static void main(String[] args) {

Circle c = new Circle(5.0f);

Ecllipse e = new Ecllipse(3.0f,4.0f);

System.out.println("area of circle is "+ c.area());

System.out.println("area of ellipse is "+ e.area());

System.out.println("perimeter of circle is "+ c.perimeter());

System.out.println("perimeter of ecclipse is "+ e.perimeter());

}

}

**2.**

**Design a vehicle class that contains the following properties of motor vehicles:**

**Fuel tank capacity, average fuel consumption per 100 km and the distance a**

**vehicle can travel on a full tank. The vehicle class should be designed as a base**

**class from which the Car and Truck classes are derived. The derived classes**

**should have following member functions.** **A function that contains data for a vehicle from the user**

** A function that computes and returns the distance a vehicle can travel on a**

**full tank.**

** A function that computes and returns how many times a vehicle has to be**

**refueled to travel a given distance.**

**Test the class in the main method.**

class Vehicle{

int capacity;

float consumption;

float netdistance;

Vehicle(int c,float cons,float dist){

capacity=c;

consumption=cons;

netdistance=dist;

}

}

class Car extends Vehicle{

Car(int c,float cons,float dist){

super(c,cons,dist);

}

float compute\_distance(){

return capacity\*(100/consumption);

}

float refuel(float d){

return d/netdistance;

}

}

class Truck extends Vehicle{

Truck(int c,float cons,float dist){

super(c,cons,dist);

}

float compute\_distance(){

return capacity\*(100/consumption);

}

float refuel(float d){

return d/netdistance;

}

}

public class Main

{

public static void main(String[] args) {

Car c = new Car(40,10,400);

Truck t = new Truck(60,20,300);

System.out.println("the distance travelled by car is "+ c.compute\_distance());

System.out.println("the distance travelled by car is "+ t.compute\_distance());

System.out.println("no of times refuel by car is "+ c.refuel(1600));

System.out.println("no of times refuel by Truck is "+ t.refuel(1500));

}

}

**3.**

class Student{

String stdname = "abhi";

String department = "cse";

int regno = 4160;

String sec = "A5";

}

class Test extends Student{

float m1=85.0f;

float m2=75.0f;

float m3=95.0f;

float m4=95.0f;

float m5=85.0f;

}

class Result extends Test{

float total,average;

float totalMark(){

total = m1+m2+m3+m4+m5;

return total;

}

float averageMark(){

average = ((m1+m2+m3+m4+m5)/5);

return average;

}

void displayresult(){

System.out.println(stdname +" "+ "of"+" "+ department +" "+ "with" +" "+ regno +" "+ "of " + sec + "has secured total and average marks of "+ total+ " "+ average+ "in the test");

}

}

public class Main

{

public static void main(String[] args) {

Student s1 = new Student();

Test t1 = new Test();

Result r1 = new Result();

float t = r1.totalMark();

float a = r1.averageMark();

r1.displayresult();

}

}