Q1.

import java.util.\*;

abstract class Figure{

    double r;

    double a;

    double v;

    public abstract void dispArea();

    public abstract void dispVolume();

}

class Cone extends Figure{

    double h;

    double r;

    double l;

    Cone(double h, double r, double l){

        super();

        this.h = h;

        this.r = r;

        this.l = l;

    }

    public void dispArea(){

        System.out.println("Area of Cone: " + Math.PI\*this.r\*(this.r+this.l));

    }

    public void dispVolume(){

        System.out.println("Volume of Cone: " + Math.PI\*this.r\*this.r\*this.h\*(0.33));

    }

}

public class Shapes{

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter radius: ");

        double r = sc.nextDouble();

        System.out.print("Enter height: ");

        double h = sc.nextDouble();

        System.out.print("Enter slant height: ");

        double l = sc.nextDouble();

        Cone cone = new Cone(h, r, l);

        cone.dispArea();

        cone.dispVolume();

    }

}

Q2.

import java.util.\*;

abstract class Figure {

    double pi=3.1420;

    double a;

    double v;

    double r;

    public abstract void calcArea();

    public abstract void calcVol();

    public abstract void dispArea();

    public abstract void dispVol();

}

class Cone extends Figure{

    double h;

    double s;

    Cone(double h, double s, double r){

        this.h = h;

        this.s = s;

        this.r = r;

    }

    public void calcArea(){

        this.a = this.pi\*this.r\*(this.r+this.s);

    }

    public void calcVol(){

        this.v = this.pi\*(this.r)\*(this.r)\*(this.h)\*(0.33);

    }

    public void dispArea(){

        System.out.println("Area: " + this.a);

    }

    public void dispVol(){

        System.out.println("Volume: " + this.v);

    }

}

class Sphere extends Figure{

    Sphere(double r){

        this.r = r;

    }

    public void calcArea(){

        this.a = 4\*this.pi\*this.r\*this.r;

    }

    public void calcVol(){

        this.v = (1.33)\*this.pi\*this.r\*this.r\*this.r;

    }

    public void dispArea(){

        System.out.println("Area: " + this.a);

    }

    public void dispVol(){

        System.out.println("Volume: " + this.v);

    }

}

class Cylinder extends Figure{

    double h;

    Cylinder(double h, double r){

        this.h = h;

        this.r =r;

    }

    public void calcArea(){

        this.a = 2\*this.pi\*this.r\*this.h;

    }

    public void calcVol(){

        this.v = this.pi\*this.r\*this.r\*this.h;

    }

    public void dispArea(){

        System.out.println("Area: " + this.a);

    }

    public void dispVol(){

        System.out.println("Volume: " + this.v);

    }

}

public class PiJava {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("For Cone: ");

        System.out.print("Enter radius of cone: ");

        double rCone = sc.nextDouble();

        System.out.print("Enter height of cone: ");

        double hCone = sc.nextDouble();

        System.out.print("Enter slant height of cone: ");

        double sCone = sc.nextDouble();

        Cone cone = new Cone(hCone,sCone,rCone);

        System.out.println("For Sphere: ");

        System.out.print("Enter radius of sphere: ");

        double rSphere = sc.nextDouble();

        Sphere sphere = new Sphere(rSphere);

        System.out.println("For Cylinder: ");

        System.out.print("Enter radius of cylinder: ");

        double rCylinder = sc.nextDouble();

        System.out.print("Enter height of cylinder: ");

        double hCylinder = sc.nextDouble();

        Cylinder cylinder = new Cylinder(hCylinder, rCylinder);

        System.out.println("SPHERE: ");

        sphere.calcArea();

        sphere.calcVol();

        sphere.dispArea();

        sphere.dispVol();

        System.out.println("CYLINDER: ");

        cylinder.calcArea();

        cylinder.calcVol();

        cylinder.dispArea();

        cylinder.dispVol();

        System.out.println("CONE: ");

        cone.calcArea();

        cone.calcVol();

        cone.dispArea();

        cone.dispVol();

    }

}

Q3.

import java.util.\*;

class X {

    int i;

    int j;

    X(int j,int i){

        this.j = j;

        this.i = i;

    }

    public int finalSum(){

        return this.i + this.j;

    }

}

class Y extends X{

    Y(int i, int j){

        super(i,j);

    }

    public int computeProduct(){

        return this.i\*this.j;

    }

}

class Z extends Y{

    Z(int i, int j){

        super(i, j);

    }

}

public class XYZ {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter i: ");

        int i = sc.nextInt();

        System.out.print("Enter j: ");

        int j = sc.nextInt();

        Z z = new Z(i, j);

        System.out.println("Product: " + z.computeProduct());

        System.out.println("Sum: " +z.finalSum());

    }

}