

```
1 package PolygonApp;
2
3 public class Point {
4     private int x;
5     private int y;
6     public Point() {
7         x=0;
8         y=0;
9     }
10    public Point(int x,int y) {
11        this.x=x;
12        this.y=y;
13    }
14    public int getX() {
15        return x;
16    }
17    public int getY() {
18        return y;
19    }
20    public void displayPoint() {
21        System.out.println("(" +x+" "+y+"");
22    }
23 }
24
```

```
Line.java
1 package PolygonApp;
2
3 public class Line {
4     private Point endPoint1;
5     private Point endPoint2;
6     public Line() {
7
8     }
9     public Line(Point endPoint1, Point endPoint2) {
10         this.endPoint1=endPoint1;
11         this.endPoint2=endPoint2;
12     }
13     public double length() {
14         double leng=Math.sqrt(Math.pow(endPoint2.getX()-endPoint1.getX(),2)+Math.pow(endPoint2.getY()-endPoint1.getY(),2));
15         return leng;
16     }
17     public void displayEndpoints() {
18         System.out.print("Endpoint 1: ");
19         endPoint1.displayPoint();
20         System.out.print("and Endpoint 2: ");
21         endPoint2.displayPoint();
22     }
23 }
24
```

```

Main1.java
1 package PolygonApp;
2 import java.util.Scanner;
3 public class Main1 {
4     public static void main(String[] args) {
5         Scanner scan=new Scanner(System.in);
6         System.out.println("Enter X coordinate for first point: ");
7         int x1=scan.nextInt();
8         System.out.println("Enter Y coordinate for first point: ");
9         int y1=scan.nextInt();
10        Point p1=new Point(x1,y1);
11        System.out.println("Enter X coordinate for second point: ");
12        int x2=scan.nextInt();
13        System.out.println("Enter Y coordinate for second point: ");
14        int y2=scan.nextInt();
15        Point p2=new Point(x2,y2);
16        Line l1=new Line(p1,p2);
17        System.out.println("Length of the line is: "+l1.length());
18        l1.displayEndpoints();
19        scan.close();
20    }
21
22 }
23

```

Tuesday, 4 March, 2025, 8:36 pm

Triangle.java

Tuesday, 4 March, 2025, 8:37 pm

```
1 package PolygonApp;
2
3 public class Triangle {
4     private Line side1;
5     private Line side2;
6     private Line side3;
7     public Triangle() {
8
9     }
10    public Triangle(Line side1, Line side2, Line side3) {
11        this.side1=side1;
12        this.side2=side2;
13        this.side3=side3;
14    }
15    public double calculateSemiPerimeter() {
16        double s=(side1.length()+side2.length()+side3.length())/2;
17        return s;
18    }
19    public double calculateArea() {
20        double s=(side1.length()+side2.length()+side3.length())/2;
21        double a=Math.sqrt((s*(s-side1.length()*(s-side2.length()*(s-side3.length()))));
22        return a;
23    }
24 }
25 }
26 }
```

```
Main2.java
1 package PolygonApp;
2 import java.util.Scanner;
3 public class Main2 {
4
5     public static void main(String[] args) {
6         Scanner scan=new Scanner(System.in);
7         Point p1=new Point(2,3);
8         Point p2=new Point(6,7);
9         Point p3=new Point(8,2);
10        Line s1=new Line(p1,p2);
11        Line s2=new Line(p2,p3);
12        Line s3=new Line(p3,p1);
13        Triangle t1=new Triangle(s1,s2,s3);
14        double s=t1.calculateSemiPerimeter();
15        double a=t1.calculateArea();
16        System.out.println("The area of the triangle is: "+a);
17        scan.close();
18
19    }
20
21 }
22
```

Tuesday, 4 March, 2025, 8:38 pm

```

1 Polygon.java
2 package PolygonApp;
3
4 public class Polygon {
5     private int nSides;
6     public Polygon(Point[] vertice) {
7         this.nSides=vertice.length;
8         edges=new Line[nSides];
9         for (int i = 0; i < nSides - 1; i++) {
10             edges[i] = new Line(vertice[i], vertice[i + 1]);
11         }
12         edges[nSides - 1] = new Line(vertice[nSides - 1], vertice[0]);
13     }
14
15     public String getName() {
16         int m=nSides;
17         switch (m) {
18             case 3:
19                 return "Triangle";
20             case 4:
21                 return "Rectangle";
22             case 5:
23                 return "Pentagon";
24             case 6:
25                 return "Hexagon";
26             default:
27                 return "Polygon";
28         }
29     }
30     public void displayEdges() {
31         int i=1;
32         for (Line edge : edges) {
33             System.out.println("Edge "+i+":");
34             edge.displayEndPoints();
35             i=i+1;
36         }
37     }
38 }
39
40
41
42
43

```

Main3.java

Tuesday, 4 March, 2025, 8:38 pm

```
1 package PolygonApp;
2
3 public class Main3 {
4
5     public static void main(String[] args) {
6         Point[] triVertice = { new Point(2, 3), new Point(6, 7), new Point(8, 2) };
7         Polygon tri = new Polygon(triVertice);
8         Point[] rectVertice = { new Point(0, 0), new Point(4, 0), new Point(4, 3), new Point
9         Polygon rect= new Polygon(rectVertice);
10        System.out.println("Polygon 1 name: " + tri.getName());
11        tri.displayEdges();
12        System.out.println("Polygon 2 name: " + rect.getName());
13        rect.displayEdges();
14
15    }
16
17 }
18
```