The code is :

```
import java.util.*;
import java.lang.*;
import java.util.*;
class Polygon implements Cloneable {
    // Data members
    private Vector widths;
    private int numSides;


    // Helping function
    private void trace(String s) {
        System.out.println(s);
    }

    // Manager function
    public Polygon(Vector widths1, int num1) {
        numSides = num1;
        widths=(Vector)widths1.clone();
    }

    // Access function
    // get
    public int getWidths(int i) {
                return ((Integer)widths.elementAt(i)).intValue(); }
    public Vector getWidths() { return widths; }
    public int getNumOfWidths() { return widths.size(); }

    // set
    public void setWidths(int i, int width) {
                widths.setElementAt(new Integer(width), i); }
    public void setWidths(Vector widths1) {

        widths=(Vector)widths1.clone();
    }
    // predicate
    public boolean isSquare() { return numSides == 4; }
    public boolean isCircle() { return numSides == 1; }
    public boolean isTriangle() { return numSides == 3; }
```

```
// Implementor
public void notPolygon() { widths = null; }

public String toString() {
       StringBuffer s = new StringBuffer();
       for (int i=0; i < getNumOfWidths(); i++)
            s.append("Width " + (i + 1) + ":" + getWidths(i) + "\n");
       return s.toString();
}
public void eat_half() {
   setWidths(1, 5);
   setWidths(3, 0);
}

public Object clone() {
     try
     { Polygon aobj = (Polygon)super.clone();
        aobj.widths = (Vector)widths.clone();
        return aobj;
     }
     catch (CloneNotSupportedException e)
     {
          // return null;
          throw new InternalError(e.getMessage());
     }
}

public boolean equals(Object obj) {
     Polygon tstA;

     if (!(obj instanceof Polygon)) return false;
     tstA = (Polygon) obj;

     return (widths.equals(tstA.widths));
}

public double perimeter(){
   double sum = 0;
   for(int i=0;i<numSides;i++){
      sum += (double)getWidths(i);
   }
   return sum;
 }
```

```
    public double areaOfRightTriangle(){

       return 0.5*getWidths(1)*getWidths(1);
     }

}


public class Demo {
    public static void main (String argv[])
    {
        Vector widths1 = new Vector();
        widths1.addElement(new Integer(3));
        widths1.addElement(new Integer(3));
        widths1.addElement(new Integer(4));
        widths1.addElement(new Integer(4));

        Polygon cake = new Polygon(widths1, 4);
        System.out.println("Print Cake.");
        System.out.println(cake);

        cake.eat_half();
        System.out.println("Cake ate by half: \n" + cake);

        Polygon new_cake=(Polygon)cake.clone();
        System.out.println("Buy another one: \n"+cake);

        if (cake.equals(new_cake)) {
            System.out.println("Same shap and size");
        }
        else {
            System.out.println("Different shap and size");
        }

        System.out.println("The perimeter of the cake is " + cake.perimeter());

        System.out.println("The area of the cake is " + cake.areaOfRightTriangle());
    }
}
```

```
105         cake.eat_half();
106         System.out.println("Cake ate by half: \n" + cake);
107
108         Polygon new_cake=(Polygon)cake.clone();
109         System.out.println("Buy another one: \n"+cake);
110
111         if (cake.equals(new_cake)) {
112             System.out.println("Same shap and size");
113         }
114         else {
115             System.out.println("Different shap and size");
116         }
117
118         System.out.println("The perimeter of the cake is " + cake.perimeter());
119
120         System.out.println("The area of the cake is " + cake.areaOfRightTriangle());
121     }
122 }
```

Execute Mode, Version, Inputs & Arguments

JDK 11.0.4 | Interactive | Stdin Inputs

CommandLine Arguments

Execute

Result

CPU Time: 0.38 sec(s), Memory: 35884 kilobyte(s) — compiled and executed in 1.133 sec(s)

```
Print Cake.
Width 1:3
Width 2:3
Width 3:4
Width 4:4

Cake ate by half:
Width 1:3
Width 2:5
Width 3:4
Width 4:0

Buy another one:
Width 1:3
Width 2:5
Width 3:4
Width 4:0

Same shap and size
The perimeter of the cake is 12.0
The area of the cake is 12.5
```